

Notes

Chapter 1

1. On general doctrinal development during the interwar period, see Robert F. Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force*, vol 1, 1907–1964 (Maxwell AFB: Air University, reprint 1989), pp 1–110; Thomas H. Greer, *The Development of Air Doctrine in the Army Air Arm, 1917–1941*, USAF Historical Studies No. 89 (Maxwell AFB: 1955; Washington, D.C.: Office of Air Force History, reprint, 1985), *passim*; Richard G. Davis, *Carl A. Spaatz and the Air War in Europe* (Washington, D.C.: Center for Air Force History, 1993), pp 180–193; Daniel R. Mortensen, “A Pattern for Joint Operations: World War II Close Air Support in North Africa,” Historical Analysis Series (Washington, D.C.: Office of Air Force History, 1994), pp 6–13; Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II*, vol 1, *Plans and Early Operations, January 1939 to August 1942* (Chicago: University of Chicago Press, 1948; reprint, Washington, D.C.: Office of Air Force History 1984), pp 17–74; John F. Shiner, *Foulois and the US Army Air Corps, 1931–1935* (Washington, D.C.: Office of Air Force History, 1983), pp 43–75, 212–235; William A. Jacobs, “Tactical Air Doctrine and AAF Close Air Support in the European Theater, 1944–45,” *Aerospace Historian* (Mar 1980), pp 35–49.

2. The Army normally delineated the contact zone by what it called the bomblines, a line close to its own forces beyond which aircraft could attack enemy targets *without* coordinating with ground commanders. Despite the confusion that subsequently would occur in the use of statistical measurements to determine tactical air power’s effec-

tiveness during the World War II, officials found the bomblines a good means to distinguish between air interdiction and close air support targets. Only much later, during the Vietnam era, would planners introduce the concept of battlefield air interdiction, which became accepted as a subset of air interdiction. When first introduced, the term battlefield air interdiction referred to the component of the air interdiction mission that supported army ground forces beyond the range of their own artillery. See the discussion in Robert F. Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force*, vol 2, 1961–1984 (Maxwell AFB: Air University, reprint 1989), pp 551–555.

3. For the best revisionist interpretation that legitimately downplays Air Corps antipathy for close air support operations, see Daniel R. Mortensen, “Tactical Aviation Technology Tested in World War II: Keeping Doctrine Abreast of Equipment,” chap. 3 in “The Low Road to Independence: From Origins to the Codification of Modern Tactical Aviation in World War II,” unpublished manuscript, Air Force History and Museums Program, Washington, D.C. See also Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II*, vol 6, *Men and Planes* (Chicago: University of Chicago Press, 1948; reprint, Washington, D.C.: Office of Air Force History 1984), pp 212–214; Greer, *Development of Air Doctrine*, pp 52–57.

4. Greer, *Development of Air Doctrine*, pp 49–52; Mortensen, *Pattern for Joint Operations*, pp 6–7.

5. Davis, *Spaatz*, pp 180–181; Greer, *Development of Air Doctrine*, pp 40–43; Mortensen, *Pattern for Joint Operations*, p 7.

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6. Mortensen, *Pattern for Joint Operations*, pp 11–13; Jacobs, “Tactical Air Doctrine,” pp 182–184.

7. A later manual, FM 100–5, “Operations,” dated May 22, 1941, established mission priorities and stressed the basic importance of air superiority as a prerequisite for effective ground operations. Kent Roberts Greenfield, *Army Ground Forces and the Air-Ground Battle Team, Including Organic Light Aviation*, U.S. Army Study No. 35 (Washington, D.C.: Historical Div, Department of the Army, 1948), pp 1–5; Mortensen, *Pattern for Joint Operations*, pp 11–13; Jacobs, “Tactical Air Doctrine,” pp 182–184.

8. Riley Sunderland, *Evolution of Command and Control Doctrine for Close Air Support* (Washington, D.C.: Office of Air Force History, 1973), pp 7–9; Davis, *Spaatz*, pp 185–186; Greenfield, *Army Ground Forces*, pp 5–12. Organizationally, Air Force Combat Command replaced GHQ Air Force in June 1941.

9. Interwar air board reports had shown that air support commands should support field armies because the range of their fighter-bombers could be expected to cover the frontage of a field army. See War Department, FM 31–35, “Aviation in Support of Ground Forces,” 9 Apr 1942, paras. 5–9; see also Greenfield, *Army Ground Forces*, pp 3–5; Jacobs, “Tactical Air Doctrine,” pp 38–39; Davis, *Spaatz*, pp 186–189; Mortensen, *Pattern for Joint Operations*, pp 20–24.

10. FM 31–35, para. 26(b).

11. *Ibid.*, para. 6.

12. *Ibid.*, para. 31; David Syrett, “Northwest Africa, 1942–1943,” in B. Franklin Cooling, ed., *Case Studies in the Achievement of Air Superiority* (Washington, D.C.: Center for Air Force History, 1993), p 6.

13. FM 31–35, para. 10.

14. Davis, *Spaatz*, p 189.

15. Mortensen, *Pattern for Joint Operations*, pp 47–56; Syrett, “Northwest Africa,” p 10.

16. Mortensen, *Pattern for Joint Operations*, pp 47–56; Wesley Frank Craven and

James Lea Cate, eds., *The Army Air Forces in World War II*, vol 2, *Europe: Torch to Pointblank, Aug 1942 to Dec 1943* (Chicago: University of Chicago Press, 1949; reprinted, Washington, D.C.: Office of Air Force History, 1984), pp 50–66.

17. Craven and Cate, eds., vol 2, *Europe: Torch to Pointblank*, pp 56–62. For the ground campaign, see George F. Howe, *Northwest Africa: Seizing the Initiative in the West*, [U.S. Army in World War II, Mediterranean Theater of Operations] (Washington, D.C.: Office of Chief of Military History, 1957).

18. Howe, *Northwest Africa*, pp 62–69. The British Western Desert Air Force, with headquarters in Egypt, was not a component of the Allied Air Force headquartered in Algeria.

19. Craven and Cate, eds., vol 2, *Europe: Torch to Pointblank*, pp 136–145. The *Luftwaffe* maintained a close air support strength of 300–330 aircraft from early January to mid-April 1943. See Air Ministry (Great Britain), *The Rise and Fall of the German Air Force, 1933–1945* (Old Greenwich, Conn.: WE Inc., 1969), p 250.

20. Mortensen, *Pattern for Joint Operations*, p 69.

21. Germany’s Field Marshal Erwin Rommel, the “Desert Fox,” mounted a surprise attack in central Tunisia against II Corps positions first in Faid Pass on February 14, 1943 and then at Kasserine four days later. Although the Allies rallied and pushed back the German advance on February 23, the Axis offensive wrecked Allied plans to divide German forces by thrusting eastward into Tunisia. Inexperienced American troops suffered more than 6,000 casualties compared with 989 German and 535 Italian casualties. See Howe, *Northwest Africa*, pp 438–481; Mortensen, *Pattern for Joint Operations*, pp 153–161; Sunderland, *Evolution*, pp 11–12.

22. Vincent Orange, *Coningham: A Biography of Air Marshal Sir Arthur Coningham* (Washington, D.C.: Center for Air Force History, 1992 reprint), chap. 10;

Mortensen, *Pattern for Joint Operations*, pp 72–73. Kuter continued to serve in the command as Coningham's deputy.

23. The incident provoked a crisis in Allied and joint relations. Apparently the theater commander, General Eisenhower, threatened to resign over the issue. For additional discussion of this affair, see George S. Patton, Diary Entries, Apr 1–4, 1943, Patton Collection, Box 3, Manuscript Division (MD), Library of Congress (LC). The diary account in the collection includes the official messages. See also Martin Blumenson, ed., *The Patton Papers*, vol 2 (Boston: Houghton Mifflin, 1974), pp 203–208; Orange, *Coningham*, pp 146–147; Laurence S. Kuter, "Goddamit Georgie: North Africa, 1943: The Birth of TAC Doctrine," *Air Force Magazine* vol 56 (Feb 1973), p 55; Craven and Cate, eds., vol 2, *Europe: Torch to Pointblank*, pp 174–175; Mortensen, *Pattern for Joint Operations*, pp 84–85.

24. A.F. Hurley and R.C. Ehrhart, eds., "The Perceptions of Three Makers of Air Power History," *Air Power and Warfare*, proceedings of the 8th Military History Symposium, United States Air Force Academy, 18–20 October 1973 (Washington, D.C.: Office of Air Force History and the United States Air Force Academy, 1979), p 109; Syrett, "Northwest Africa, 1942–1943," pp 153–192; Mortensen, *Pattern for Joint Operations*, pp 4–5.

25. Craven and Cate, eds., vol 2, *Europe: Torch to Pointblank*, pp 113–115, 161–165.

26. "Some Notes on the Use of Air Power in Support of Land Operations, Introduced by B.L. Montgomery, Dec 1944," USAFHRA, 168.6006–137; see also Air Marshal Sir Arthur Coningham, "The Development of Tactical Air Forces," *Journal of the Royal United Service Institution* vol 91 (May 1946), p 215; Davis, *Spaatz*, p 311.

27. Mortensen, *Pattern for Joint Operations*, p 85; Davis, *Spaatz*, p 321.

28. Mortensen, *Pattern for Joint Operations*, p 86; Craven and Cate, eds., *Europe: Torch to Pointblank*, vol 2, pp 166–206.

29. Memo, Brig Gen L.S. Kuter, Dep Comdr, Northwest African Tactical Air Force, to H.H. Arnold, CG AAF, Subject: "Organization of American Air Forces," May 12, 1943, USAFHRA, 614.201–1; for events, see Craven and Cate, eds., *Europe: Torch to Pointblank*, vol 2, pp 47–56.

30. Mortensen, *Pattern for Joint Operations*, pp 47–56.

31. Memo, Kuter, "Organization of American Air Forces."

32. Davis, *Spaatz*, pp 312–315.

33. War Department, FM 100–20, "Command and Employment of Air Power," July 21, 1943, paras. 3, 9(e); Jacobs, "Tactical Air Doctrine," pp 39–40.

34. FM 100–20, paras. 1, 2, and 3. The manual at no time used the word "support" to characterize the AAF's role in air-ground operations. Instead, it termed the air element "coordinate" forces that must not be distributed among or subordinated to ground elements. Although the manual permitted one exception, a theater situation in which "GROUND FORCE UNITS ARE OPERATING INDEPENDENTLY OR ARE ISOLATED BY DISTANCE OR LACK OF COMMUNICATION," tactical air operations in Northwest Europe required far more decentralized command and control arrangements than the manual's authors envisioned.

35. *Ibid.*, para 2.

36. *Ibid.*, para 16.

37. *Ibid.*

38. Davis, *Spaatz*, p 322.

39. *Ibid.*, pp 312–314; Greenfield, *Army Ground Forces*, pp 47–50.

40. For example, Memo, Kuter, "Organization of American Air Forces."

Chapter 2

1. The description of Patton's career that follows is based for the most part on Claude S. Erbsen, "Old Blood and Guts," *Weekly Philatelic Gossip* (Nov 21, 1953), pp 366–368; and "Biographical Notes on Gen George S. Patton, Jr.," in the Patton Collection, Box 5, Chronological File, MD, LC. See also Martin Blumenson, *Patton: The Man Behind the Legend, 1885–1945* (New York: William Morrow, 1985); and Blumenson, ed., *Patton Papers*.

2. U.S. Third Army (hereafter cited as US3A), "After Action Report, Aug 1, 1944–May 9, 1945," vol 2: Staff Section Reports, Part 4: "G–3 Section Report"; Blumenson, ed., *Patton Papers*, p 407. On Operation Fortitude, see Alfred D. Chandler, ed., *The Papers of Dwight David Eisenhower: The War Years*, vol 3 (Baltimore: Johns Hopkins University Press, 1970), pp 1789, 1978–1979, 2035; and Chester Wilmut, *The Struggle for Europe* (New York: Harper & Row, 1952), pp 199–201, 332–333. See also Charles Cruickshank, *Deception in World War II* (New York: Oxford University Press, 1979), pp 170–189, 235–236.

3. "84th Fighter Wing" lineage and honors history in Maurer Maurer, ed., *Air Force Combat Units of World War II* (Washington, D.C.: Office of Air Force History, 1983), pp 407–408. On Weyland's career, see Intvw, Gen O.P. Weyland by James C. Hasdorff, Nov 19, 1974, USAFHRA, K239.0512–813; Ninth AF (hereafter cited as 9AF), "Biographies," 1944, USAFHRA, 533.293, 1944–45; "Biographical Sketch," n.d., USAFHRA, 168.7104–103; XIX TAC, "History of XIX Tactical Air Command," Dec 4, 1943–Jun 30, 1944, USAF-HRA, 537.01, 1943–44.

4. Blumenson, *Patton: Man Behind Legend*, especially the preface and chaps. 1 and 10.

5. Blumenson, ed., *Patton Papers*, pp, 354–355; Blumenson, *Patton: Man Behind Legend*, p 216.

6. Thomas J. Mayock, "Notes on the Development of AAF Tactical Air Doctrine," *Military Affairs* vol 14 (Winter 1950), p 187.

7. Intvw, Weyland, Nov 19, 1974, p 140.

8. Intvw, Gen James Ferguson by Lyn R. Officer and James C. Hasdorff, May 8–9, 1973, USAFHRA, K239.0512–672, p 129.

9. George S. Patton, Jr., *War As I Knew It* (Boston: Houghton Mifflin, 1947), p 99.

10. William C. Stancik and R. Cargill Hall, "Air Force ROTC: Its Origins and Early Years," *Air University Review* vol 35 No. 5 (Jul–Aug 1984), p 42.

11. For the background of Operation Overlord, see Gordon A. Harrison, *Cross-Channel Attack*, [U.S. Army in World War II: Mediterranean Theater of Operations] (Washington, D.C.: Office of the Chief of Military History, 1951); John Keegan, *Six Armies in Normandy* (New York: Viking Press, 1982); Carlo D'Este, *Decision in Normandy* (New York: E. P. Dutton, 1983); Thomas E. Griess, ed., vol 1, *The Second World War: Europe and the Mediterranean* (Wayne, N.J.: Avery Publishing Group, 1984), pp 253–281; Charles B. MacDonald and Martin Blumenson, "Recovery of France," in Vincent J. Esposito, ed., *A Concise History of World War II* (New York: Praeger, 1964), pp 70–85; and Charles B. MacDonald, *The Mighty Endeavor: The American War in Europe* (New York: Quill, 1986), pp 269–284.

12. HQ AAF, *Condensed Analysis of Ninth Air Force in the European Theater of Operations* (Washington, D.C.: Office of Air Force History, 1984), pp 49–55; Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II*, vol 3, *Europe: Argument to V–E Day, January 1944–May 1945* (Chicago: University of Chicago Press, 1951; reprint, Washington, D.C.: Office of Air Force History, 1983), pp 107–121; Rpt, Col H.J. Knerr, Dep, Air Support Command (ASC) to CG, AAF, "Report on Manpower and Shipping Requirements,"

prepared by Bradley Committee, Jun 23, 1943, USAFHRA, 612–201A.

13. Rpt, Col Philip Cole *et al.*, VIII ASC to HQ, 8AF, “Observers Report: Air Operations in Support of Ground Forces in North West Africa, March 15–April 5, 1943,” Jul 1, 1943, USAFHRA, 650.03–2 [hereafter cited as Rpt, 8AF, “Observers Report” (1943)]. I am indebted to Edgar Raines for pointing out that the range of aircraft provided the air-ground organization with the logic for pairing tactical air commands with field armies, numbered air forces with army groups, and strategic air forces under the theater commander. The interwar Air Board reports made this clear, and air and ground leaders established this standard for World War II. Accordingly, evaluators deemed the range of a tactical air command’s fighter-bombers sufficient to cover a field army’s frontage, and they tested this concept in the 1941 air-ground maneuvers. Memo, Edgar R. Raines, Historian, Army Center of Military History, May 20, 1991. See also HQ AAF, *Condensed Analysis of Ninth AF*, p 50; John F. Ramsey, *Ninth Air Force in the ETO, Oct 16, 1943 to Apr 16, 1944*, USAF Historical Studies No. 32 (Washington, D.C.: AAF Historical Office, 1945), pp 1–29, 49–65, and appendix 1, pp 198–208.

On doctrinal and organizational analyses during the interwar period, see Futrell, *Ideas, Concepts, Doctrine*, vol 1, 1907–1960, pp 1–110; Greer, *Development of Air Doctrine*, *passim*; Davis, *Spaatz*, pp 180–193; Mortensen, *Pattern for Joint Operations*, pp 6–13; Craven and Cate, eds., vol 1, *Plans and Early Operations*, pp 17–74; Shiner, *Foulois*, pp 43–75, 212–235.

14. Rpt, 8AF, “Observers Report” (1943), p 37.

15. *Ibid.*, p 40.

16. *Ibid.*, p 4.

17. *Ibid.*, pp 20, 40. In organizing the crucial air-ground support effort and in establishing the procedures for its practice in that theater, the experience already acquired in combat proved far more significant in shap-

ing action than did the doctrinal pronouncements from army headquarters in Washington, D.C., important as the latter might be. Despite the publication of FM 100–20 (1943), army air and ground leaders in the field relied on what worked, on common sense, and on the more practical FM 31–35 (1942) when ordering their cooperative air–ground operations. For air operations in Sicily and Italy, see Alan F. Wilt, “Allied Cooperation in Sicily and Italy, 1943–45,” in B. Franklin Cooling, ed., *Case Studies in the Development of Close Air Support* (Washington, D.C.: Office of Air Force History, 1990), pp 193–236; Harry L. Coles, *Participation of the Ninth and Twelfth Air Forces in the Sicilian Campaign*, USAF Historical Studies No. 37 (Washington, D.C.: AAF Historical Office, 1945); Carlo D’Este, *Bitter Victory: The Battle for Sicily, 1943* (New York: E. P. Dutton, 1988); and Craven and Cate, eds., vol 2, *Europe: Torch to Point-blank*, pp 415–596. For Patton’s comments, see Memo, Lt Gen Carl Spaatz, CG, NAAF to Maj Gen Barney Giles, C/S, AAF, Sep 12, 1943, Arnold Collection, File 1938–46, 370.2 (Africa) (34), Box 104, MD, LC. Although Ninth Air Force pilots preparing for the invasion of France benefited from observing air operations in Italy, they considered most innovations like the Rover Joe land-based air force controller system less applicable for the mobile operations they expected in Northwest Europe. Intvw, Weyland, Nov 19, 1974; Ltr, Maj Gen Robert L. Delashaw, 405th FG Comdr, to author, Aug 21, 1989.

18. HQ AAF, *Condensed Analysis of Ninth AF*, p 50; Ramsey, *Ninth Air Force*, pp 1–29, 49–65; and appendix 1, pp 198–208.

19. W. A. Jacobs, “Air Command in the United Kingdom, 1933–44,” *Journal of Strategic Studies*, vol 11 (Mar 88), pp 51–78; D’Este, *Decision in Normandy*, p 213.

20. Jacobs, “Air Command,” pp 62–64; Lewis H. Brereton, *The Brereton Diaries* (New York: William Morrow, 1946), pp 213–276.

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21. HQ 12th Army Group, “Brief of Joint Operations Plan—U.S. Forces for Operation Overlord (revised May 8, 1944),” in RG 331, Records of Allied Operational and Occupation Headquarters, WWII, File 1943–45, 370.2, Box 85, NA.

22. For the often bewildering array of organizational changes from December 1943 to May 1944, see XIX TAC, “History,” Dec 4, 1943–Jun 30, 1944; Ramsey, *Ninth Air Force*, appendix 1, pp 198–208; and John Schlight, “Elwood R. Quesada: TAC Air Comes of Age,” in John L. Frisbee, ed., *Makers of the Modern Air Force* (Washington, D.C.: Office of Air Force History, 1987), pp 177–198.

23. Schlight, “Elwood R. Quesada,” pp 177–198.

24. XIX TAC, “History,” Dec 4, 1943–Jun 30, 1944; War Department: The Adjutant General’s Office, *Official Army Register*, Jan 1, 1945 (Washington, D.C.: U.S. Government Printing Office, 1945).

25. Eugene M. Greenberg, XIX TAC Signal Office, “Signals: The Story of Communications in the XIX Tactical Air Command up to V–E Day,” Jun 15, 1945, USAFHRA 537.901; XIX TAC, “A Report on the Combat Operations of the XIX Tactical Air Command,” May 30, 1945, pp 18–23, USAFHRA, 537.02, 1945; George R. Thompson and Dixie R. Harris, *The Signal Corps: The Outcome, Mid-1943 through 1945* [U.S. Army in World War II] (Washington, D.C.: Office of the Chief of Military History, 1966), chap. 4.

26. XIX TAC, “Tactical Air Operations in Europe: A Report on Employment of Fighter-Bombers, Reconnaissance and Night Fighter Aircraft by XIX Tactical Air Command, Ninth Air Force, in Connection with the Third US Army Campaign from 1 August 1944 to VE Day 9 May 1945,” May 19, 1945, pp 39–41, USAFHRA, 537.04A, 1945; Blanche D. Coll, Jean E. Keith, and Herbert H. Rosenthal, *The Corps of Engineers: Troops and Equipment*, [U.S. Army in World War II] (Washington, D.C.: Center of Military History, 1958), chap. 14, pp 25, 56, 60.

27. XIX TAC, “History,” Dec 4, 1943–Jun 30, 1944; 9AF, “Annual Statistical Summary, 1944,” USAFHRA, 533.3083, 1944.

28. XIX TAC, “History,” Dec 4, 1943–Jun 30, 1944. See also the monthly histories of the individual flying groups for precise manning and aircraft statistics.

29. Rpt, AAF Evaluation Board, ETO, “Effectiveness of Third-Phase Tactical Air Operations in the ETO, 4 May 1944 to 8 May 1945,” pp 305–308, USAFHRA, 138.4–36, Aug 1945 (hereafter cited as AAF Eval Bd, “Third Phase Tactical Air Ops”); U.S. Forces, European Theater, Battle Studies, vol 2: Air Operations, No. 14: “Fighter-Bomber Cooperation” (USFET, n.d.), US Army Military History Institute (MHI).

30. Ninth Air Force’s procurement problem worsened initially when General Quesada, among others, agreed to have projected P–51s sent to the Eighth Air Force where they could be better used as fighter escorts for the heavy bombers in the struggle for air supremacy. Until late spring, the Ninth had to make do with the Eighth’s cast-off P–47 “clinkers.” By D-Day, however, the Ninth began receiving the D25 and D27 Thunderbolts, which had paddle-blade propellers, bubble canopies, and larger fuel tanks. These Thunderbolt models became famous in the battle for France. Likewise, new P–51Ds arrived in late spring, and this model, with its teardrop plexiglass canopy and extra gun in each wing, proved more than a match for the German FW 190 and Bf 109 aircraft. Supply procedures in Britain called for common user items to be sent to units through Army supply channels, while specialized air forces’ items were supplied through air forces channels but under USSTAF auspices. In practice, both channels broke down and supply officials often resorted to informal cooperation. See XIX TAC, “History,” Dec 4, 1943–Jun 30, 1944; Craven and Cate, eds., vol 3, *Europe: Argument to V–E Day*, pp 631–664; Rpt, IX Fighter

Command, A-4, n.d., Quesada Collection, Box 3, MD, LC; Memo, 9AF, Jan 29, 1944, USAFHRA, 168.6005-1033; Intvw, Lt Gen Elwood R. Quesada by Steve Long and Ralph Stephenson, May 1975, USAFHRA, K239.0512-838.

31. XIX TAC, "History," Dec 4, 1943–Jun 30, 1944.

32. *Ibid.*

33. Ramsey, *Ninth Air Force*, pp 91–94, 101–107; XIX TAC, "History," Dec 4, 1943–Jun 30, 1944; IX TAC, "Unit History," Apr 1944, USAFHRA, 536.02, Apr 1944, May 1944; Intvw, Lt Gen John J. Burns, USAF (Ret) by the author, Jan 7, 1992. General Quesada's range program set the stage for extensive collaboration with civilian technicians on the continent. Ultimately, each tactical air command possessed an Operational Research Section that applied scientific and engineering expertise to tactical air power problems.

34. 9AF, "Weekly Intelligence Summaries" (hereafter cited as "Weekly Intsum"), Nov 3, 1943–Jun 1, 1944, USAFHRA, 533.607, 1944–45; 9AF, "Operational Statistics," Jan 1, 1944–Jun 1, 1944, USAFHRA, 533.3082, 1944.

35. Craven and Cate, eds., vol 3, *Europe: Argument to V-E Day*, chap. 2; Air Ministry (Great Britain), *German Air Force*, chap. 13; MacDonald, *Mighty Endeavor*, pp 266–268.

36. 9AF, "Weekly Intsum"; 9AF, "Operational Statistics"; IX TAC, "Unit History," Apr 1944, p 4; XIX TAC, "History," Dec 4, 1943–Jun 30, 1944. Ninth Air Force leaders successfully promoted a vigorous program to upgrade the status of fighter-bomber achievements in the Northwest European campaign. After the invasion, combat experience found the fighter-bomber employed far more often as a bomber than as a fighter, significantly altering the fighter-bomber pilot's image.

37. Robert H. George, *Ninth Air Force, Apr to Nov 1944*, USAF Historical Studies No. 36 (Washington, D.C.: AAF Historical Office, 1945), pp 30–49.

38. George, *Ninth AF*, pp 52–60; AAF Eval Bd, "Third Phase Tactical Air Ops," pp 48–49; Craven and Cate, eds., vol 3, *Europe: Argument to V-E Day*, pp 139–140.

39. XIX TAC, "History," Dec 4, 1943–Jun 30, 1944. By mid-April, XIX TAC was deployed at the following airstrips in Kent:

Unit	Location
100th Ftr Wing	Lashenden ALG
354th Ftr Gp	Lashenden ALG
358th Ftr Gp	High Halden ALG
362d Ftr Gp	Headcorn ALG
363d Ftr Gp	Staplehurst ALG
303d Ftr Wing	Ashford ALG
36th Ftr Gp	Kingsnorth ALG
373d Ftr Gp	Woodchurch ALG
406th Ftr Gp	Ashford ALG

40. *Ibid.*

41. Schlight, "Elwood R. Quesada," p 189.

42. HQ AAF, AAF Ltr 80-3, "Air Employment Terminology," Nov 16, 1944, Arnold Collection, File 1938-46, Box 104, MD, LC.

43. See for example, XIX TAC, "Combat Operations," May 30, 1945, introduction.

44. IX TAC, "Unit History," Apr 1944, p 4.

45. Cooperative efforts between the First Army and IX TAC fell short of collocating their headquarters. For details on the lecture program, see Ramsey, *Ninth Air Force*, p 104; Rpt, IX Fighter Command, A-3, n.d., Quesada Collection, Box 3, MD, LC; IX ASC, "Reference Guide on Tactical Employment of Air Power Organization and Control Channels of Tactical Units, Prepared Oct 29, 1943, revised Feb 24, 1944," USAFHRA, 168.6005-103A, Feb 25, 1944.

46. US3A, "After Action Report, Aug 1, 1944–May 9, 1945," vol 2: Staff Section Reports, part 3: "G-2 Section Report," pp 4–5; XIX TAC, "History," Dec 4, 1943–Jun 30, 1944.

47. US3A, "After Action Rpt," vol 2, part 3: "G-2 Section Rpt," pp 5–7.

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48. Rpt, IX Fighter Command, A–3.
49. Intvw, Weyland, Nov 19, 1974, pp 64–76; XIX TAC, “History,” Dec 4, 1943–Jun 30, 1944.
50. Patton, Diary Entries, May 26, 27, 1944.
51. Blumenenson, ed., *Patton Papers*, p 30.
52. Rpt, HQ Seventh Army, “Notes on the Sicilian Campaign,” Oct 30, 1943.
53. *Ibid.*, p 6.
54. *Ibid.*, p 12.
55. *Ibid.*, Annex, p 2.
56. Intvw, Weyland, Nov 19, 1974, pp 67, 76.
57. Memo, Raines, May 20, 1991.
58. Ltr, Gen Sir B.L. Montgomery to Lt Gen George S. Patton, Jr., May 4, 1944, Patton Collection, Box 14, MD, LC.
59. Ltr, Lt Gen George S. Patton, Jr., to Gen Sir B.L. Montgomery, May 7, 1944, Patton Collection, Box 14, MD, LC.
60. Omar N. Bradley, *A Soldier’s Story* (New York: Henry Holt, 1951), p 249. Despite Bradley’s understandable irritation, Brereton did not refuse joint training because he preferred other missions before close air support. His background in tactical operations, his experience with the British in the Middle East, and his offer to conduct such training in May argue to the contrary. Moreover, he assigned Major General Ralph Royce, his deputy commander, to serve as Ninth Air Force liaison officer with General Bradley on board the USS *Augusta* command ship during the invasion. Later, Royce would accompany Bradley ashore when the First Army commander established his Normandy command post. See Rpt, Col Philip Cole, “Air Planning for Overlord,” Aug 8, 1944, USAFHRA, 248.411–16, 1944.
61. For narrative and analysis of the landing and Normandy campaign, see Harrison, *Cross-Channel Attack*; Martin Blumenenson, *Breakout and Pursuit*, [U.S. Army in World War II: European Theater of Operations] (Washington, D.C.: Office of the Chief of Military History, 1965); D’Este, *Decision in Normandy*; Griess, ed., vol 1, *Second World War*, pp 253–281; MacDonald, *Mighty Endeavor*, pp 241–319.
62. AAF Eval Bd, “Third Phase Tactical Air Ops,” pp 65–75; Craven and Cate, eds., vol 3, *Europe: Argument to V–E Day*, pp 185–199; George, *Ninth AF*, pp 76–81.
63. HQ 12th Army Group, “Joint Operations Plan”; AAF Eval Bd, “Third Phase Tactical Air Ops,” pp 62–63; 9AF, “Weekly Intsum”; 9AF, “Operational Statistics.” See also W. A. Jacobs, “The Battle for France,” in Cooling, ed., *Close Air Support*, pp 237–293; Col E.L. Johnson, G–3 (Air), FUSA to AGF (Army Ground Forces) Board, HQ ETOUSA, “Information Regarding Air-Ground Joint Operations,” Jul 16, 1944, RG 337, Entry 29, Box 51, NA.
64. IX TAC, “Unit History,” June 1944, p 2, USAFHRA, 536.02, Jun 1944; AAF Eval Bd, “Third Phase Tactical Air Ops,” pp 65–75; Craven and Cate, eds., vol 3, *Europe: Argument to V–E Day*, pp 185–199; George, *Ninth AF*, pp 76–81.
65. IX TAC, “Unit History,” Jun 1944; XIX TAC, “History of the XIX Tactical Air Command,” Jul 1, 1944–Feb 28, 1945, part 2, Operations Narrative, USAFHRA, 537.01, 1944–45; George, *Ninth AF*, pp 97–98.
66. For the Cherbourg campaign, see George, *Ninth AF*, pp 101–108; AAF Eval Bd, “Third Phase Tactical Air Ops,” pp 75–76; Craven and Cate, eds., vol 3, *Europe: Argument to V–E Day*, pp 199–204; and Memo, Brig Gen D. M. Schlatter, Dep C/S-Opns, 9AF, to CG, USSTAF, “Report on Cherbourg Attack, Jul 21, 1944,” Spaatz Collection, Box 164, MD, LC.
67. Memo, Brig Gen Schlatter, to USSTAF, “Report on Cherbourg Attack.”
68. This analysis is based on Rpt, Col E. L. Johnson, G–3 (Air), FUSA to AGF Board, HQ ETOUSA, “Information Regarding Air-Ground Joint Operations,” Jul 16, 1944, RG 337, Entry 29, Box 51, NA (hereafter cited as “Johnson Report,”). See also First Army (hereafter cited as US1A) G–3 (Air), “Air

Support Report, 6 Aug 1944,” USAFHRA, 533.4501–3, May–Aug 1944. Military designations for Army air specialists were G–2 (Air), Army air intelligence, and G–3 (Air), Army air operations. For the airmen, intelligence was termed A–2 and operations A–3, except at the squadron level, which used S–2 and S–3, respectively.

69. “SCR” designated a Signal Corps Radio. For air support party liaison communications, Weyland’s command relied primarily on the long-range SCR–399, a 400-watt mobile HF set paired with a SCR–624 VHF set operating on 110 volts. Half-tracks transported the equipment with armored divisions, while 2½-ton trucks operated with the infantry. The SCR–399 100-mile range radio replaced the less durable SCR–299 early in the campaign, while the SCR–624, an adaptation of the SCR–522 for ground use, provided a 130-mile line-of-sight range from ground to plane. The command used ground force land lines with the HF radio for standby during static situations, but it relied on HF sets for mobile operations for requesting air missions, passing bomblines, field orders, weather reports, and operations results. The VHF radio remained the mainstay for contacting aircraft, adjusting artillery fire, and receiving immediate “flash” reconnaissance reports. See also Greenberg, “Signals”; XIX TAC, “Combat Operations,” May 30, 1945, pp 18–23; Thompson and Harris, *Signal Corps*, chap. 4.

70. IX TAC, “Unit History,” Jul 1–31, 1944, pp 12–13, USAFHRA, 536.02, July 1944.

71. *Ibid.*; 9AF, “Reconnaissance in the Ninth Air Force: A Report on Reconnaissance Operations During the European Campaign,” pp 21–27, n.d. [May 9, 1945], MHI; AAF Eval Bd, “Third Phase Tactical Ops,” pp 346–350.

72. See FM 100–20, para 16. See also FM 31–35, para 10.

73. Johnson Report.

74. IX TAC, “Unit History,” July 1944, p 14; Rpt, IX TAC, A–3, n.d., Quesada Collection, Box 3, MD, LC.

75. IX Engineer Command completed six airfields in June. See George, *Ninth AF*, pp 99–101; AAF Eval Bd, “Third Phase Tactical Ops,” p 67; 9AF, “Progress Report, Airfield Construction,” July 24, 1944, USAFHRA, 168.7104–83.

76. IX TAC, “Unit History,” July 1944, p 7; Thompson and Harris, *Signal Corps*, pp 102–104, 433–435. See also Thompson and Harris chap. 4, pp 174–176, for a discussion of the modified SCR–584 introduced by Weyland’s command in the fall of 1944.

77. IX TAC, “Unit History,” July 1944, pp 7–8.

78. *Ibid.*, p 8; 513th Fighter Sqdn, “Unit History Report for Period Ending Jul 31, 1944,” USAFHRA, GP–406–HI.

79. George, *Ninth AF*, chaps. 3, 4; XIX TAC, “History,” July 1, 1944–Feb 28, 1945, pt. 2.

80. In June 1944 planners reshuffled reconnaissance units to support the larger visual and photographic requests. The newly designated 10th Photo Reconnaissance Group sent two of its four photo squadrons to the 67th Tactical Reconnaissance Group in return for the 12th and 15th Tactical Reconnaissance Squadrons. Each group now had two photo and two reconnaissance squadrons. On June 16, the 10th joined the XIX TAC, but remained under IX TAC control until after XIX TAC became operational with Third Army. See IX TAC, “Unit History,” June 1944. See also Thomas G. Ivie, *Aerial Reconnaissance: The 10th Photo Recon Group in World War II* (Fallbrook, Calif.: Aero Publishers, 1981), pp 37–38; Ltr, Brig Gen Russell A. Berg, USAF (Ret) to author, Sep 6, 1989.

81. George, *Ninth AF*, p 91.

82. AAF Eval Bd, “Third Phase Tactical Ops,” p 1. See also chapter 1 in “Third Phase Tactical Ops” for a discussion of the

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more contemporary concept of Battlefield Air Interdiction.

83. Rpt, 8AF, "Observers Report" (1943).

84. George, *Ninth AF*, p 149.

85. 9AF, "Report on Activities of the Ninth Air Force, period Jun 6–Aug 28, 1944," p 9, USAFHRA, 533.306–2, 1944.

86. For Weyland's awareness of the problem, see XIX TAC, "Twelve-Thousand Fighter-Bomber Sorties: XIX Tactical Air Command's First Month of Operations in Support of Third US Army in France," Sep 30, 1944, "Recapitulation," USAFHRA, 168.7104–69.

87. Memo, Brig Gen Schlatter to USSTAF, "Rpt on Cherbourg Attack," p 5.

88. George, *Ninth AF*, p 118.

89. XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, pt 2; US3A, "After Action Rpt," vol 2, part 3: "G–2 Section Rpt," pp 8–9; Cmd, p 2; G–3, p 11.

90. US3A, "After Action Rpt," vol 2, part 3: "G–2 Section Rpt," p 8.

91. *Ibid.*, p 9; II, Cmd, p 2; II, G–3, p 9; Rpt, IX TAC, G–3 (Air), n.d., Quesada Collection, Box 5, MD, LC.

92. On Operation Cobra, see D'Este, *Decision in Normandy*, part 3; Blumenson,

Breakout and Pursuit, part 3; Russell F. Weigley, *Eisenhower's Lieutenants: The Campaigns of France and Germany, 1944–45* (Bloomington: Indiana University Press, 1981), chap. 8; Bradley, *Soldier's Story*, chap. 17.

93. AAF Eval Bd, "Third Phase Tactical Air Ops," pp 85–94; Craven and Cate, eds., vol 3, *Europe: Argument to V–E Day*, pp 228–238; IX TAC, "Unit History," July 1944, pp 2–5; Rpt, 12th Army Group, Air Effects Committee, "Effect of Air Power on Military Operations, Western Europe," 15 July 1945, pp 102–105, MHI (hereafter cited as Rpt, Air Effects Committee, "Effect of Air Power").

94. Intvw, Quesada, May 12, 1975; IX TAC, "Unit History," July 1944, pp 2–5; Craven and Cate, eds., vol 3, *Europe: Argument to V–E Day*, pp 238–243; Schlight, "Elwood R. Quesada," pp 177–198.

95. US1A "Air Support Report," Aug 6, 1944, pp 10–11; 9AF, "Weekly Intelligence Summary," Jul 24–31, 1944; 9AF, "Operational Statistics," Jul 24–31, 1944.

96. XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, pt. 2; Blumenson, ed., *Patton Papers*, pp 489–493.

Chapter 3

1. Weyland began a daily diary on July 29, 1944, which is indispensable to an understanding of XIX TAC operations. See Otto P. Weyland, "Diary, Jul 29, 1944–May 18, 1945," USAFHRA, 168.7104–1, 1944–45. For an overview of the campaign in France, see Weigley, *Eisenhower's Lieutenants*; Blumenson, *Breakout and Pursuit*; D'Este, *Decision in Normandy*; Craven and Cate, eds., vol 3, *Europe: Argument to V–E Day*, chap. 8.

2. This discussion of the drive across France is based in large part on the Weyland diary and the following: US3A, "After Action Rpt," vol 1, Aug and Sep Ops; XIX

TAC, "12,000 FB Sorties" Sep 30, 1944; XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2; Blumenson, ed., *Patton Papers*, pp 494–560; US3A, "After Action Rpt," vol 1, Aug 1, 1944; and Weyland, "Diary," Aug 1, 1944. The fighter groups seem to have been assigned on the basis of their location and current operational commitment.

3. US3A, "After Action Rpt," vol 1, Aug 1, 1944; Weyland, "Diary," Aug 1, 1944.

4. For a discussion of XIX TAC's communication systems, see XIX TAC, "Combat Operations," pp 18–22; Greenberg, "Signals"; XIX TAC, "Combat Operations,"

May 30, 1945, pp 18–23; and Thompson and Harris, *Signal Corps*, chap. 4.

5. Weyland, “Diary,” Aug 1, 1944; XIX TAC, “12,000 FB Sorties,” Aug 1, 1944. The first week was a transitional period marked by a gradual buildup of forces. See XIX TAC, “Morning Summaries,” Aug 8–Sep 30, 1944, USAFHRA, 537.306A, Aug–Sep 1944.

6. XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 2; XIX TAC, “12,000 FB Sorties,” pp 1–6. Normally, the fighter control center (later renamed the tactical control center), or the ground controller, would provide new bomblines information to pilots.

7. Intvw, Weyland, Nov 19, 1974, p 143. Air liaison officers assigned to ground units were initially called Air Support Party Officers, and later Tactical Air Party Officers.

8. Criticism of Patton’s generalship is found in Weigley, *Eisenhower’s Lieutenants*, pp 243–245.

9. For Weyland’s views, see XIX TAC, “Combat Operations,” p 43; On the air umbrella concept, see FM 100–20, sec 3 para 16a (3)b.(1), p 11.

10. The phrase is the XIX TAC historian’s.

11. 9AF, “Schedule of Operations, Aug 2, 1944,” USAFHRA, 533.3082, Aug 1944.

12. XIX TAC, “12,000 FB Sorties,” pp 1–6. Lt John J. Burns, a 371st Fighter Group pilot, recalled that pilots served as air liaison officers with the ground units, but only exclusively after the drive east. In Brittany, his main air control officer was a former armor officer. Lieutenant Burns considered the air control officer, who eventually was killed at Brest, an outstanding air-ground liaison officer. See Intvw, Lt Gen John J. Burns by Hugh N. Ahmann, Jun 5–8, 1984, and Jan 1986, reel no. 41509, USAFHRA, K239.0512–1587, pp 21–27; Intvw, Burns, Jan 7, 1992.

13. XIX TAC, “12,000 FB Sorties,” pp 1–6; Intvw, Burns, Jun 5–8, 1984, p 14; Intvw, Burns, Jan 7, 1992.

14. XIX TAC, “Combat Operations,” pp 27–31, 38–40; XIX TAC, “Tactical Air Oper-

ations in Europe, pp 39–41; AAF Evaluation Board, ETO, “HQ Ninth AF, Report on Tactical Air Cooperation, Organization, Methods and Procedures with Special Emphasis on Phase III Operations,” Jul 31, 1945, pp 327–361, USAFHRA, 138.4–34, 1945.

15. “Prepared Hessian surfacing” is the British term for prefabricated bituminized surfacing, the ready-made, tarred canvas, or Hessian-type material, used for aircraft runways, taxiways, and storage areas in World War II.

16. XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 1, pp 114–126; Craven and Cate, eds., vol 3, *Europe: Argument to V-E Day*, p 132; *Roulement* is a French term meaning “rolling” (forward).

17. In this regard, Patton agreed with Bradley, who told him privately that Brest had to be taken to uphold the view that the U.S. Army could not be beaten. Blumenston, ed., *Patton Papers*, p 532.

18. 36th FG, “Unit History,” Jul–Sep 1944, USAFHRA, GP–36–HI.

19. For Weyland’s early views on statistical problems, see XIX TAC, “12,000 FB Sorties,” p 1.

20. Keegan, *Six Armies*; D’Este, *Decision in Normandy*; Griess, ed., vol 1, *Second World War*, chaps. 14, 15; MacDonald and Blumenson, “Recovery of France,” in Esposito, *Concise History*, pp 91–103; MacDonald, *Mighty Endeavor*, pp 331–376.

21. Von Kluge replaced von Rundstedt on July 5, after the latter advised Hitler to abandon Caen’s defense. Later, von Kluge assumed direct command of Army Group B after British fighter-bombers severely wounded its commander, Rommel, on July 17. Although von Kluge and other senior *Wehrmacht* officers questioned Hitler’s strategy, they dared not oppose the *Fuehrer*, especially after the abortive plot of July 20, 1944.

22. HQ 9AF, “Operations Journal,” Aug 6, 1944, USAFHRA, 533.305, Apr–Dec 1944. For most of the campaign in France, the 100th Wing controlled the 354th, 358th, 371st, and 405th Fighter Groups, and the 10th Photo Reconnaissance Group; the

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303d Wing controlled the 36th, 373d, and 406th Fighter Groups.

23. US3A, "After Action Rpt," vol 2, part 3: "G-2 Section Rpt," pp 11–12; Ivie, *Aerial Reconnaissance*, pp 54–56; Patton, Diary Entry, Aug 6, 20, 1944.

24. XIX TAC, "12,000 FB Sorties," Aug 7, 1944; XIX TAC, "Tactical Air Operations in Europe," pp 16–17.

25. Weyland, "Diary," Aug 16, 1944; Thompson and Harris, *Signal Corps*, chap. 4; Rpt, Ninth Air Force, "Tactical Air Operations, Jun 6–Aug 28, 1944," p 16, USAFHRA, 533.306–2, 1944.

26. Ltr, Dr. David Griggs, Member, Advisor Specialist Group, USSTAF, to E. L. Bowles, Expert Consultant to Secy War, Oct 17, 1944, Quesada Collection, Box 5, MD, LC. In late September the command renamed the fighter control center the tactical control center (TCC) and decided to locate it near the advance headquarters rather than in the rear, between the wing and the operational groups. In this instance, the civilians seemed most concerned with fixed interdiction targets, while Weyland's chief worry centered on the *Luftwaffe* threat.

27. XIX TAC, "12,000 FB Sorties," Aug 7–8, 1944; XIX TAC, "Morning Summary," Aug 8, 1944.

28. Weyland, "Diary," Aug 6, 1944.

29. *Ibid.*, Aug 6, 9, 1944. On direct orders from General Arnold on January 25, 1945, Brigadier General Grandison Gardner, Eglin Field commander, conducted extensive tests under strict security against simulated Crossbow targets using a variety of weapons and attack methods. After completing their report on March 1, General Gardner and his team briefed their findings to commanders at every major headquarters in England. Craven and Cate, eds., vol 3, *Europe: Argument to V-E Day*, pp 97–99.

30. XIX TAC, "Morning Summary," Aug 10–11, 1944.

31. D'Este, *Decision in Normandy*, pp 418–460; Blumenson, *Breakout and Pursuit*, pp 479–589; Griess, ed., vol 1, *Second World War*, pp 336–338.

32. Craven and Cate, eds., vol 3, *Europe: Argument to V-E Day*, chap. 2; Air Ministry (Great Britain), *German Air Force*, pp 333–339, 354, 365–367; XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2, August Operations.

33. XIX TAC, "12,000 FB Sorties," Aug 17, 1944. On German losses see D'Este, *Decision in Normandy*, pp 431–432, 437–438; and AAF Eval Bd, "Third Phase Tactical Air Ops," p 121.

34. Weyland, "Diary," Aug 13, 1944; XIX TAC, "Tactical Air Operations in Europe," p 17. The name "X-Ray" appears to have been given to the liaison detachment after the summer campaign.

35. US3A, "After Action Rpt," vol 2, part 4: "G-3 Section Rpt," p 12.

36. Weyland, "Diary," Aug 16, 1944.

37. *Ibid.*, Aug 14, 1944. In France the command's forward directional post radars consisted of British Type 15 and 11 radars. Thompson and Harris, *Signal Corps*, pp 151, 639. In an intriguing incident at this August 14 meeting, General Vandenberg proposed in the event First and Third Armies reversed their areas of operations, that Quesada and Weyland should exchange fighter-bomber groups as well. Weyland did not concur. Although such a move might also demonstrate tactical air power's flexibility and mobility, Weyland clearly believed that his units should remain under his control to maintain the integrity of the command.

38. Ivie, *Aerial Reconnaissance*, pp 54–61.

39. XIX TAC comments on the Y-service focus on its importance in the Ardennes Campaign rather than in the battle of France. XIX TAC, "Tactical Air Operations in Europe," p 31; Weyland, "Diary"; Rpt, 9AF, "Tactical Air Operations, Jun 6–Aug 28, 1944," p 16, USAFHRA, 533.306–2, 1944.

40. XIX TAC, "Morning Summary," Aug 10, 11, 13, 1944.

41. XIX TAC, "Morning Summary," Aug 15, 16, 17, 1944; XIX TAC, "12,000 FB Sorties," Aug 17, 1944.

42. Geoffrey Perret, *There's a War to Be Won: The United States Army in World War II* (New York: Random House, 1991), chap. 6; Weigley, *Eisenhower's Lieutenants*, chaps. 1 and 2.

43. MacDonald, *Mighty Endeavor*, pp 320–327; Weigley, *Eisenhower's Lieutenants*, pp 218–237; Griess, ed., vol 1, *Second World War*, pp 347–350.

44. XIX TAC, “12,000 FB Sorties,” Aug 20, 1944.

45. Weigley, *Eisenhower's Lieutenants*, pp 243–245; US3A, “After Action Rpt,” vol 1, Aug 23–24, 1944; Blumenson, ed., *Patton Papers*, pp 526–528.

46. AAF Eval Bd, “Third Phase Tactical Air Ops,” p 118.

47. XIX TAC, “12,000 FB Sorties,” pp 1–6; AAF Eval Bd, “Third Phase Tactical Air Ops,” pp 305–309.

48. XIX TAC, “Morning Summary,” Aug 20–24, 1944; XIX TAC, “12,000 FB Sorties,” Aug 20–24, 1944. The command favored the small, high-velocity rockets before bombs because of their flexibility of use in combat and because they added little to an airplane's weight and did not appreciably effect an airplane's speed.

49. XIX TAC, “12,000 FB Sorties,” Aug 24, 1944; 371st FG, “Unit History,” Aug 1944, USAFHRA, GP-371–HI, Aug 1944.

50. US3A, “After Action Rpt,” vol 1, Aug 26, 1944; Blumenson, ed., *Patton Papers*, p 547; Blumenson, *Breakout and Pursuit*, pp 664–670.

51. XIX TAC, “Morning Summary,” Aug 25, 1944; XIX TAC, “12,000 FB Sorties,” Aug 25, 1944; 354th FG, “Unit History,” Aug–Sep 1944, USAFHRA GP-354–HI(FI).

52. Memo, Lt Col Charles H. Hallet, AC/S, to CG, XIX TAC, “Air Support of Third Army's Drive to the East,” Aug 23, 1944, USAFHRA, 168.7104–85; Weyland, “Diary.” Weyland also discussed the urgent need for air base defenses because of Third Army's departure from the Le Mans area.

53. XIX TAC, “12,000 FB Sorties,” Aug 30, 1944.

54. US3A, “After Action Rpt,” vol 1, Aug 30, 1944. See Memo, untitled, undated, on IX Troop Carrier supply flights to Third Army, USAFHRA, K110.7006–2. For a concise analysis of Third Army's supply dilemma, see Martin L. Van Creveld, *Supplying War: Logistics from Wallerstein to Patton* (Cambridge and New York: Cambridge University Press, 1977), chap. 7. Third Army's low supply priorities even extended to communications equipment. Early in the campaign, its radios consisted of one set each for the entire army of the following short-range (less than 25 miles) sets: SCR-300, the celebrated FM walkie-talkie, SCR-508 portable radio, and SCR-510 (like the 508, but vehicle-mounted), and eight SCR-511 portable cavalry guidon sets. See Thompson and Harris, *Signal Corps*, pp 151, 638–639.

55. Craven and Cate, eds., vol 3, *Europe: Argument to V-E Day*, pp 583–585; Intvw, Burns, Jan 7, 1992.

56. US3A, “After Action Rpt,” vol 1, Aug 30, 1944. See Memo, on IX Troop Carrier supply flights; Van Creveld, *Supplying War*, chap. 7.

57. US3A, “After Action Rpt,” vol 2, part 3: “G-2 Section Rpt,” p 52.

58. XIX TAC, “12,000 FB Sorties.” See also, HQ AAF, “Air-Ground Teamwork on the Western Front: The Role of the XIX Tactical Air Command during August 1944,” Wings at War Series, No. 5, USAFHRA, 537.04C, Aug 1944; XIX TAC, “Planes Over Patton: XIX Tactical Air Command's Support of Third Army in Its Swift End-Run Through France,” Sep 30, 1944, USAFHRA, 168.7104–86, Sep 30, 1944. The command's exploits are also highlighted in “U.S. Tactical Airpower in Europe,” in *Impact*, vol 3, No. 5 (May 1945), USAFHRA, 168.7104–92, May 1945.

59. XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 1, Sep 1944, p 4.

60. US3A, “After Action Rpt,” vol 1, p 52; XIX TAC, “Morning Summary,” Sep 1–16, 1944. Memo, National Security Agency (hereafter cited as NSA), “Ultra

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and Its Use by XIX TAC,” May 30, 1945, in “Reports by U.S. Army Ultra Representatives with Army Field Commands in the European Theater of Operations,” part 2, XIX TAC, pp 104–109, NSA, Special Research, History–023. For a discussion of Ultra’s role with Third Army and the XIX TAC, see chap. 4, p 186.

61. 36th FG, “Unit History,” Sep 1944; XIX TAC, “12,000 FB Sorties,” Aug 24, 1944; 371st FG, “Unit History,” Aug 1944.

62. General Weyland needed the A–20 Havoc (F–3) for daytime reconnaissance, and Ninth Air Force agreed to its use until the night program got underway. As Colonel Berg later recalled, however, the squadron became available for daylight operations, not because of modest requirements for night photography during mobile operations, but because it lacked night navigation aids at the time. In any event, it proved to be a valuable if vulnerable reconnaissance asset. Ltr, Brig Gen Berg to author, Sep 8, 1989; Ivie, *Aerial Reconnaissance*, p 68.

63. XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945; 406th FG, “Unit History,” Jun 1, 1944–May 1, 1945, USAFHRA, GP–406–HI, 1944–45.

64. Weyland, “Diary,” Sep 9–11, 1944.

65. Air Force chief, General Arnold, sent his congratulations, adding he thought it “most appropriate that the Air Force Tactical Commander was present with the Army Commander at the surrender ceremony.” XIX TAC, “12,000 FB Sorties,” p 5; 9AF, “Rpt on Activities, Jun 6–Aug 28, 1944”; Craven and Cate, eds., vol 3, *Europe: Argument to V–E Day*, pp 265–266.

66. XIX TAC, “Tactical Air Operations in Europe,” p 1.

67. *Ibid.*

68. Blumenson, *Breakout and Pursuit*, chap. 30.

69. Weyland, “Diary,” Aug 22, 1944, Sep 2, 1944.

70. For operational information on the command’s role in the Brittany assault in September, see XIX TAC, “Morning Summaries,” Sep 3–18, 1944. Although a single

mission normally involved three 12-plane squadrons, variations to match needs occurred frequently.

71. On the Third Army buildup for the Mosel Offensive, see US3A, “After Action Rpt,” vol 1, Sep 1–5, 1944. Characteristically, Weyland met personally with Third Army leaders on the proposed offensive. Although this meeting took place on the eve of the attack, both his command’s proven flexibility and the X-Ray detachment’s liaison work offset potential problems that might otherwise have arisen on such short notice.

72. US3A, “After Action Rpt,” vol 1, Sep 4–5, 1944. For the Third Army’s offensive, see Weigley, *Eisenhower’s Lieutenants*, pp 327–344; Blumenson, *Breakout and Pursuit*, chap. 32.

73. B.H. Liddell Hart, *History of the Second World War* (New York: G. P. Putnam’s Sons, 1970), p 557.

74. AAF Eval Bd, “Third Phase Tactical Air Ops,” pp 113–114.

75. For the air role, see AAF Eval Bd, “Third Phase Tactical Air Ops,” pp 113–118; Craven and Cate, eds., vol 3, *Europe: Argument to V–E Day*, pp 262–265; XIX TAC, “Combat Operations,” pp 55–57; XIX TAC, “History,” Sep 1944.”

76. Blumenson, *Breakout and Pursuit*, chap. 30.

77. Weyland, “Diary,” Aug 22, 1944, Sep 2, 1944; AAF Eval Bd, “Third Phase Tactical Air Ops,” pp 113–114.

78. XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, Sep 1944; AAF Eval Bd, “Third Phase Tactical Air Ops,” pp 113–118; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 2, pp 172–173; XIX TAC, “Combat Operations,” pp 9–10; XIX TAC, “Tactical Air Operations in Europe,” pp 5–8.

79. XIX TAC, “Combat Operations,” p 56. See also Third Army’s similar assessment in US3A, “After Action Rpt,” vol 1, Aug Ops, p 52, and vol 2, part 4: “G–3 Section Rpt,” p 16.

80. Weyland, “Diary,” Sep 8, 1944; US3A, “After Action Rpt,” vol 1, Sep 8, 1944.

81. This analysis of tactical air support at Brest is based primarily on XIX TAC, "Morning Summaries," Sep 3–16, 1944; 9AF, "Weekly Intsum," Sep 3–16, 1944; and XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, pp 7–25. See also 358th FG, "Unit History," Aug–Sep 1944, USAFHRA, GP–358–HI; 358th FG, "Operational Reports," Aug–Sep 1944, USAFHRA, GP–358–SU–OP–S, Aug–Sep 1944; 362d FG, "Unit History," Aug–Sep 1944, USAFHRA, GP–362–HI; 362d FG, "Operational Reports," Aug–Sep 1944, USAFHRA, GP–362–SU–OP–S, Aug–Sep 1944.

82. Appropriately, the 362d Fighter Group appeared for the finale at Brest. With the 358th, it had flown in support of VIII Corps in Brittany nearly every day since August 1, 1944. Their efforts intensified from August 25, and after September 10, these two groups normally flew against Brest targets daily. After the fortress surrendered on September 18, both groups immediately began flying armed reconnaissance missions in Germany from their new bases in eastern France. See 358th FG, "Unit History," Aug–Sep 1944; 358th FG, "Operational Rpts," Aug–Sep 1944; 362d FG, "Unit History," Aug–Sep 1944; 362d FG, "Operational Rpts," Aug–Sep 1944.

83. Weyland, "Diary," Sep 6, 1944.

84. *Ibid.* For airfield construction programs, see XIX TAC, "12,000 FB Sorties," pp 1–6; Intvw, Burns, Jun 5–8, 1984, p 14; Intvw, Burns, Jan 7, 1992; XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, pp 77–82.

85. XXIX TAC received the 36th and 373d Fighter Groups on October 1, 1944, and September 29, 1944, respectively. The 371st Fighter Group was transferred to the XII TAC. Weyland, "Diary," Sep 7–8, 1944; XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, pp 77–82.

86. Weyland, "Diary," Sep 10, 1944; US3A, "After Action Rpt," vol 1, Sep 21, 1944.

87. The worsening supply situation is recorded in the daily ops analyses and summaries. See also US3A, "After Action Rpt," vol 1, Aug–Sep 1944.

88. XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, pp 121–124. Unit movements are also described in the group histories for August and September 1944. For unit movements, the command used its own trucks, but it always needed assistance from Ninth Air Force and Third Army for necessary additional transportation.

89. 36th FG, "Unit History," Aug–Sep 1944; 354th FG, "Unit History," Aug–Sep 1944.

90. Bad weather in September forced the aviation engineers to lay heavier pierced-steel planking, also known as Marston Mat, for its runways. See chap. 4, pp 188–189, and 36th FG, "Unit History," Aug–Sep 1944; 354th FG, "Unit History," Aug–Sep 1944.

91. Weyland, "Diary," Sep 17, 1944.

92. XIX TAC, "Morning Summaries," Sep 19–25, 1944; 9AF, "Weekly Intsum," Sep 19–25, 1944; XIX TAC, "History," Jul 1, 1944–Feb 28, 1945; 9AF, "Operational Statistics," Sep 19–25, 1944.

93. Weyland, "Diary," Sep 20–21, 1944. Weyland, to his credit, rarely imposed with requests for this kind of assistance, and then only on command matters he judged critical. General Wood did not appear especially preoccupied with bureaucratic minutia at this time, although Patton would relieve him during the Lorraine Campaign because of combat stress.

94. Weyland, "Diary," Sep 24–25, 1944; XIX TAC, "Morning Summary," Sep 24–25, 1944; 405th FG, "Unit History," Sep 1944, USAFHRA, GP–405–HI(FTR), Sep 1944. Regarding weather conditions, the command normally required a 3,000-foot ceiling with broken clouds and at least three miles of visibility. Takeoff minimums were a 1,000-foot ceiling and three miles of visibility. However, as Weyland readily admitted, "in cases of great urgency," like the 4th Armored Division crisis, he sent his crews out when the target areas had weather down to 1,500 or 1,000 feet. XIX TAC, "Combat Operations," p 37.

95. Ltr, Lt Gen George S. Patton, Jr., CG, Third Army, to Corps Commanders and CG,

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XIX TAC, “Letter of Instruction Nr 4,” Sep 25, 1944, in XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, appendix 8, USAF-HRA, 537.01, 1944–45. See also US3A, “After Action Rpt,” vol 1, Sep 25, 1944.

96. XIX TAC, “12,000 FB Sorties,” pp 5–6. By the end of August, as Weyland noted, his command operated on fronts 350 miles apart. By mid-September 1944, however, the distance separating operations in Brittany and Patton’s forward elements in eastern France totaled nearly 500 miles.

97. XIX TAC, “Combat Operations,” p 53.

98. XIX TAC, “12,000 FB Sorties,” pp 3–5. The command possessed an average of 439 and 429 operational aircraft during August and September 1944, respectively.

99. XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, appendix 10: Statistical Summary; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 1, pp 99–126, 193–194; XIX TAC, “Combat Operations,” pp 4–5. Ninth Air Force had no official policy on fighter pilot combat tour length. The XIX TAC normally rotated pilots to the continental United States after 200 combat hours; however, to maintain fitness, the command found that pilots required frequent leave and rest periods before accumulating 200 combat hours.

100. XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 1, pp 99–126; XIX TAC, “Combat Operations,” pp 4–5.

101. Intvw, Weyland, Nov 19, 1974,” p 140.

102. Weyland, “Diary,” Sep 23, 1944.

Chapter 4

1. For land and air action during the campaign, see H.M. Cole, *The Lorraine Campaign* [U.S. Army in World War II: European Theater of Operations] (Washington, D.C.: Office of the Chief of Military History, 1950); Weigley, *Eisenhower’s Lieutenants*, pp 327–346, 385–401; Blumenson, ed., *Patton Papers* pp 536–591; Craven and Cate, eds., vol 3, *Europe: Argument to V-E Day*, pp 595–635; HQ AAF, *Condensed Analysis of Ninth AF*, pp 31–39; Griess, ed., vol 1, *Second World War*, chap. 15; Charles B. MacDonald and Martin Blumenson, “Defeat of Germany,” in Brig Gen Vincent J. Esposito, USA (Ret), ed., *A Concise History of World War II* (New York: Praeger, 1964), pp 97–105; MacDonald, *Mighty Endeavor*, pp 366–387; and Christopher R. Gabel, “The Lorraine Campaign: An Overview, September–December 1944” (Ft Leavenworth: US Army CGSC, 1985).

2. Almost a half-century afterward, the Combat Studies Institute at the United States Army’s Command and General Staff College and the Army War College made the Third Army’s Lorraine Cam-

paign the centerpiece of its military courses. From the perspective of Army educators, this campaign represented a well-documented, modern, complex military operation that permitted officers to evaluate a wide variety of arms and branch activities at different organizational levels, from company to corps. Ltr, Col Donald P. Shaw, USAMHI, to Lt Gen DeWitt C. Smith, Jr., USA (Ret.), “Study of the Lorraine Campaign at USMAWC,” Feb 11, 1982; Ltr, Jerold E. Brown, USACGSC, Combat Studies Institute, to author, Mar 8, 1990; Gabel, “Lorraine Campaign.”

Unfortunately the Lorraine Campaign has been mostly ignored by airmen. The aerial phase of this campaign generally has been viewed as an unhappy experience in which bad weather, hardened targets, and limited achievements offered few lessons for tactical air power. Most students of air power have instead fixed on the glorious days of armored column cover in August 1944, the exciting December counterattack in the Ardennes, or the strategic bombing campaign and struggle for aerial suprema-

cy high over Fortress Europe. For them, the Lorraine Campaign has offered little drama or instruction. In the official Army Air Forces account of air action in Northern Europe during World War II, for example, tactical operations are submerged entirely in the coverage of the strategic bombing campaign and special operations. See Craven and Cate, eds., vol 3, *Europe: Argument to V-E Day*, pp 595–635.

3. Gabel, “Lorraine Campaign,” pp 1–10; Weigley, *Eisenhower’s Lieutenants*, pp 327–328; Cole, *Lorraine Campaign*, chap. 1. This analysis of land operations is based on the works listed in note 1, *supra*. Allied forces in the north faced similar, if larger, river obstacles in their path leading to the Ruhr industrial region of Germany.

4. XIX TAC, “Combat Ops,” pp 57–64; XIX TAC, “History,” Jul 1, 1944–Feb 18, 1945, part 2: Sep, Oct 1944.

5. Air Ministry (Great Britain), *German Air Force*, pp 336–341, 365–381; Ralph Bennett, *Ultra in the West: The Normandy Campaign 1944–1945* (New York: Charles Scribner’s Sons, 1979), pp 175–185.

6. XIX TAC, “History,” Jul 1, 1944–Feb 18, 1945, part 5: Statistical Summary.

7. Blumenson, ed., *Patton Papers*, pp 552–553. Patton called September 23 “one of the bad days of my military career. Bradley called me to say that higher authority had decided that I would have to give up the 6th Armored and also assume a defensive attitude, owing to lack of supplies.” Patton, *War as I Knew It*, p 130.

8. XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 1, pp 82–88; XIX TAC, “Combat Ops,” pp 57–64; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 2: Sep, Oct 1944. Although XIX TAC officers complained about their smaller force, if pressed they also admitted that their ground support responsibility lessened because of Third Army’s reduction to two corps along a narrow front. For a description of XII TAC, see HQ AAF, *Condensed Analysis of Ninth AF*, p 72.

9. The analysis of communication operations that follows is based on Rpt, J.E.

Faulkner, “Operational Employment of Radar in the XIX Tactical Air Command,” Advanced Science Base Laboratory, British Branch Radiation Laboratory, MIT, n.d. [ca 1945], USAFHRA 537.906, 1945, and on 9AF, “MEW Operations in XIX Tactical Air Command,” ORS Report No. 65, Nov 20, 1944; XIX TAC, “Combat Ops,” pp 19–23; XIX TAC, “Tactical Air Ops in Europe,” pp 16–29; and Rpt, AAF Evaluation Board, ETO, “Tactics and Techniques Developed by the United States Tactical Air Commands in the European Theater of Operations,” Mar 11, 1945, USAFHRA 138.4–33, 1945, pp 39–48.

10. XIX TAC, “12,000 FB Sorties,” p 2.

11. Thompson and Harris, *Signal Corps*, chap. 4 and appendix: “Signal Corps Equipment, World War II”; XIX TAC, “Tactical Air Ops in Europe,” pp 16–31; AAF Eval Bd, “Third Phase Tactical Air Ops,” pp 370–373; XIX TAC, “Signals: The Story of Communications in the XIX Tactical Air Command Up to V-E Day,” Jun 15, 1945, USAFHRA 537.901.

12. See Rpt, Faulkner, “Operational Employment of Radar”; Thompson and Harris, *Signal Corps*.

13. Weyland, “Diary,” Sep 27, 1944; XIX TAC, “Combat Ops,” pp 25–26; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, Sep–Oct 1944; AAF Eval Bd, “Third Phase Tactical Air Ops,” pp 384–385.

14. Ltr, David Griggs, Member, Advisor Specialist Group, USSTAF, to Brig Gen O.P. Weyland, Oct 3, 1944, USAFHRA 537.101, 1944.

15. *Ibid*. The staff correspondence consists of various routing sheets, dated October 10 and 17, 1944, and filed under XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, appendix 8, USAFHRA 537.01, 1944.

16. Cole, *Lorraine Campaign*, pp 1–255; Weigley, *Eisenhower’s Lieutenants*, pp 253–319; Griess, ed., vol 1, *Second World War*, pp 360–365.

17. Charles B. MacDonald, *The Siegfried Line Campaign*, [U.S. Army in World War II: European Theater of Operations] (Wash-

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ington, D.C.: Office of the Chief of Military History, 1963), pp 119–206.

18. Bernard Montgomery received his fifth star and Field Marshal's baton effective September 1, 1944, just before the debacle of Market Garden. With the additional star he outranked the Supreme Allied Commander, General Eisenhower. To be sure, American authorities were not far behind and promoted Eisenhower to General of the Army on December 20, 1944.

19. Weigley, *Eisenhower's Lieutenants*, pp 350–355; Richard Lamb, *Montgomery in Europe, 1943–1945: Success or Failure?* (New York: Franklin Watts, 1984), pp 252–262. Eisenhower realized, certainly by September 23, 1944, when at his direction Bradley instructed Patton's Third Army to assume a defensive posture, that the Allies could not continue major offensive operations without supplies unloaded at the Belgian port of Antwerp.

20. Ltr, Lt Gen Patton to Corps Commanders and CG, XIX TAC, "Letter of Instruction," Sep 25, 1944, in XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, appendix 8, USAFHRA, 537.01, 1944–45; see also US3A, "After Action Rpt," vol 1, Sep 25, 1944.

21. See Mary H. Williams, *Chronology, 1941–1945*, United States Army in World War II: Special Studies (Washington, D.C.: Office of the Chief of Military History, 1960).

22. The framework for this discussion of the Lorraine Campaign is based in large part on the Weyland diary and on US3A, "After Action Rpt," vol 1: Sep, Oct, Nov, Dec Ops; XIX TAC, "Morning Summaries," Sep 25–Dec 16, 1944; 9AF, "Summary of Operations," Sep 25–Dec 16, 1944, USAFHRA, 533.3082, 1944 (hereafter cited as "Ops Summary"); XIX TAC, "Daily Intsum," Sep 25–Dec 16, 1944, USAFHRA, 537.606, 1944 (hereafter cited as "Daily Intsum"); Kit C. Carter and Robert Mueller, compilers, *The Army Air Forces in World War II: Combat Chronology, 1941–1945* (Washington, D.C.: Office of Air Force History, 1973); XIX TAC,

"History," Jul 1, 1944–Feb 28, 1945, part 2: Sep, Oct, Nov, Dec 1944.

23. Rpt, Lt Col Charles H. Hallet, AC/S, to CG, 9AF, "Use of Napalm Bombs," Oct 3, 1944, USAFHRA, 537.453, Oct–Nov 1944.

24. See also XIX TAC, "Report on Bombing of Metz Forts," Sep–Nov 1944, USAFHRA, 537.453, 1944; Rpt, "Use of Napalm Bombs," Oct 3, 1944; Rpt, AAF Eval Bd, ETO, "The Effect of Air Power in the Battle of Metz," Jan 19, 1945, USAFHRA, 138.4–30.

25. Cole, *Lorraine Campaign*, p 241. Army Air Forces records indicate that the attacks Cole refers to on September 28 actually occurred on September 29, 1944.

26. On the Ninth Air Force's autumn rail interdiction program, see Craven and Cate, eds., vol 3, *Europe: Argument to V-E Day*, pp 613–623.

27. Weyland, "Diary," Oct 3, 1944; XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Oct 1944.

28. Americans fighting in the Lorraine Campaign would readily concede that the French military engineers deserved their high reputation for building effective fortifications.

29. Weyland, "Diary," Oct 2, 1944.

30. US3A, "After Action Rpt," vol 1: Sep, Oct, Nov, Dec Ops; XIX TAC, "Morning Summaries," Sep 25–Dec 16, 1944; 9AF, "Ops Summary," Sep 25–Dec 16, 1944; XIX TAC, "Daily Intsum," Sep 25–Dec 16, 1944; Carter and Mueller, *Army Air Forces in World War II*; XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Sep, Oct, Nov, Dec 1944.

31. XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Oct 1944.

32. Weyland, "Diary"; Hallet appears to have understood the importance of Ultra data much sooner, or have felt less threatened by its special access channel through a lower ranking officer, than did Koch. Irving mistakenly asserts that Patton did not have access to Ultra. David Irving, *The War Between the Generals* (New York: Congdon & Lattes, 1981). See Thomas Parrish, *The*

Ultra Americans: The U.S. Role in Breaking the Nazi Codes (New York: Stein and Day, 1986), pp 189–228, and the two National Security Agency Reports: Memo, NSA, “Ultra and the Third Army,” May 28, 1945 in NSA, Special Research, History–023, “Reports by U.S. Army Ultra Representatives with Army Field Commands in the European Theatre of Operations,” part 1: Third Army, pp 22–26; and Memo, NSA, “Ultra,” in *Ibid.* part 2: XIX TAC, pp 104–109. Along with Patton and Colonel Koch, the following Third Army officers received Ultra briefings: Maj Gen Hobart R. Gay, Chief of Staff, Col Paul D. Harkins, Dep Chief of Staff, Brig Gen Halley G. Maddox, G–3 (Operations), Col Robert S. Allen, Asst G–2. In the XIX TAC, Weyland’s executive officer, Lieutenant Col Walter E. Bligh was the only other officer authorized to receive Ultra intelligence. Apart from the German counterattack in early August 1944 and one in the spring of 1945, the National Security Agency reports do not elaborate on Ultra’s impact on specific air or ground events.

33. Richard H. Kohn and Joseph P. Harahan, eds., *Air Superiority in World War II and Korea* (Washington, D.C.: Office of Air Force History, 1983), p 57; Air Ministry (Great Britain), *German Air Force*, pp 336–341, 365–381; Bennett, *Ultra in the West*, pp 175–185.

34. Although Ultra information confirmed a sizeable *Luftwaffe* recovery and buildup in October and November 1944, the Ultra intercepts did not indicate the purpose of the *Luftwaffe* actions. Memo, Lt Col Charles H. Hallet, AC/S, to A–3, XIX TAC, Oct 6, 1944, USAFHRA, 537.306A, Oct 1–15, 1944.

35. Weyland, “Diary,”; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 1, 124–133; XIX TAC, “Tactical Air Ops in Europe,” pp 39–41; Richard K. Smith, “Marston Mat,” in *Air Force Magazine* (Apr 1989), pp 84–88.

36. Weyland, “Diary,”; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 1,

124–133; XIX TAC, “Tactical Air Ops in Europe,” pp 39–41; Smith, “Marston Mat,” pp 84–88.

37. Weyland, “Diary,”; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 1, 124–133; XIX TAC, “Tactical Air Ops in Europe,” pp 39–41.

38. Weyland, “Diary,”; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 1, 124–133; XIX TAC, “Tactical Air Ops in Europe,” pp 39–41.

39. XIX TAC, “History,” Jul 1, 1944–Feb 29, 1945, part 2: Oct, Nov 1944; Weyland, “Diary,” Dec 10, 1944; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 1, 124–133.

40. US3A, “After Action Rpt,” vol 1, Oct Ops.

41. XIX TAC’s attack against the dam was the first attempt by P–47s against such a target. Weyland, “Diary,” Oct 18, 1944; US3A, “After Action Rpt,” vol 1, Oct 18, 1944.

42. Intvw, Burns, Jan 7, 1992.

43. 362d FG, “Unit History,” Oct 1944; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 2, pp 11–14.

44. XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 2, pp 11–14.

45. US3A, “After Action Rpt,” vol 1, Oct 18, 1944.

46. Weyland, “Diary,” Oct 1944; Rpt, XIX TAC, A–3, “Operation Madison: Air Plan in Support of Third U.S. Army,” Nov 3, 1944.

47. US3A, “After Action Rpt,” vol 1, Oct Ops. See also Cole, *Lorraine Campaign*, pp 296–310; Weigley, *Eisenhower’s Lieutenants*, pp 383–431; Bradley, *Soldier’s Story*, pp 430–450.

48. Weyland, “Diary,” Oct 27, 1944.

49. Memo, Brig Gen O.P. Weyland, CG, XIX TAC, to Lt Gen G.S. Patton, CG, US3A, Oct 28, 1944, USAFHRA, 537.01, 1944; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, appendix 8.

50. Weyland, “Diary,” Oct 29, 1944; Patton, Diary Entry, Oct 29, 1944.

51. XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 2: Oct 1944. See

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also AAF Eval Bd, “Third Phase Tactical Air Ops,” part 2 for analysis of equipment effectiveness.

52. US3A, “After Action Rpt,” vol 1, Oct 30, 1944.

53. Weyland, “Diary,” Nov 1–2, 1944; Blumenson, ed., *Patton Papers*, p 567.

54. Weyland, “Diary,” Nov 2, 1944; Van Creveld, *Supplying War*, chap. 7.

55. Weyland, “Diary,” Oct 1944; Rpt, “Operation Madison,” Nov 3, 1944.

56. Weyland, “Diary,” Oct 1944; Rpt, “Operation Madison,” Nov 3, 1944.

57. US3A, “After Action Rpt,” vol 2, part 3: “G–2 Section Rpt,” pp 19–20; Ivie, *Aerial Reconnaissance*, pp 80, 92.

58. XIX TAC “Combat Ops,” p 32. General Weyland believed that two tactical reconnaissance squadrons and one photo squadron adequately met the needs of his command and Third Army’s two corps, but only without including requirements from higher headquarters. This had become an issue in October because Ninth Air Force requests took priority over those of Third Army until October 25. Not until that date did XIX TAC and Third Army convince the requesters that the urgency of Operation Madison required moving Army requests to the top of the priority list. Like its photo squadron, Colonel Russell Berg’s 10th Photo Group played an increasingly important role in the fall. Despite the fact that the weather deteriorated considerably in November, the group flew 831 sorties, or 138 more than it did in October. Much of the increase can be attributed to the ground offensive early in the month and reconnaissance requirements for the major assault planned for early December. Ltr, Brig Gen Russell A. Berg, USAF (Ret), to author, Oct 24, 1989.

59. Weyland, “Diary,” Oct 31, 1944.

60. Weyland, “Diary,” Nov 5, 1944; Craven and Cate, eds., vol 3, *Europe: Argument to V–E Day*, p 597. The new air force would support the operations of Lieutenant General Jacob Devers’ 6th Army Group.

61. Weyland, “Diary,” Nov 1, 1944; XIX TAC, “Combat Ops,” pp 27–30; XIX TAC,

“Tactical Air Ops in Europe,” pp 24–29. Although Weyland would continue to have problems coordinating air defense in Third Army’s area of operations, he and his army colleagues avoided the sometimes bitter dispute between ground and air authorities over command and control of air defense components. The AAF argued for air force control. See HQ AAF, *Condensed Analysis of Ninth AF*, pp 100–101.

62. Blumenson, ed., *Patton Papers*, p 570; 405th FG, “Unit History,” Nov 1944; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 2: Nov Ops, p 6. See appendix 3 for pilot claims for November 8, 1944.

63. Weyland, “Diary,” Nov 8, 1944; XIX TAC, “Combat Ops,” p 37; 362d FG, “Unit History,” Nov 1944.

64. Weyland, “Diary,” Nov 9, 1944; AAF Eval Bd, “Third Phase Tactical Air Ops,” pp 156–165. Although good reasons beyond Patton’s friendship with Spaatz and Doolittle dating from North Africa existed for employing heavy bombers in tactical operations, using them in a tactical role violated established Army Air Forces doctrine. Yet the record shows that Weyland and his fellow tactical airmen did not concern themselves with this issue. If the heavy bombers might help the army move, they argued for employing them and welcomed their support.

65. XIX TAC, “Rpt on Bombing Metz Forts,” Sep–Nov 1944; Rpt, “Use of Na-palm Bombs,” Oct 3, 1944; Rpt, AAF Eval Bd, “Air Power in Battle of Metz,” Jan 19, 1945.

66. AAF Eval Bd, “Third Phase Tactical Air Ops,” p 165.

67. *Ibid.*, pp 166–175. Cobra, with its short bombing, continued to haunt Allied planners until the spring campaign and the return to mobile warfare.

68. Gabel, “Lorraine Campaign,” pp 24–25.

69. XIX TAC, “Combat Ops,” pp 60–62. According to Richard K. Smith, napalm’s effectiveness in World War II did not match later, more deadly versions because the earlier variety did not have a barometric proximity fuze which detonated the container

approximately 100 feet above ground. Because this type of fuzing was unavailable in 1944–1945, the weapon did not produce the lethal 360-degree spread of fire. Richard K. Smith, “Manuscript Comments” to the author, Apr 21, 1992. For a discussion of the ethical concerns of airmen, see Conrad C. Crane, *Bombs, Cities, and Civilians: American Airpower Strategy in World War II*, (Lawrence, Kan.: University of Kansas Press, 1993).

70. Air Ministry (Great Britain), *German Air Force*, pp 336–341, 365–381; Bennett, *Ultra in the West*, pp 175–185.

71. Weyland, “Diary,” Nov 8–15, 1944.

72. XIX TAC, “Operational Statistics,” 1944–1945; XIX TAC, “Morning Summaries,” Sep 25–Dec 16, 1944; 9AF, “Ops Summary,” Sep 25–Dec 16, 1944; XIX TAC, “Daily Intsum,” Sep 25–Dec 16, 1944; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 2: Nov, 1944.

73. XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 2: Nov, Dec 1944; Rpt, Faulkner, “Operational Employment of Radar”; 9AF, “MEW Ops in XIX TAC,” Nov 20, 1944; XIX TAC, “Combat Ops,” pp 19–23; XIX TAC, “Tactical Air Ops in Europe,” pp 16–29; Rpt, AAF Eval Bd, “Tactics and Techniques,” pp 39–48.

74. 354th FG, “Unit History,” Nov 1944.

75. Weyland, “Diary,” Nov 1944; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 1, 133–147.

76. Weyland, “Diary,” Nov 1944; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 1, 133–147.

77. Ltr, CG, XIX TAC, to CG, 9AF, “Authorized Aircraft in Fighter Groups,” Nov 14, 1944, USAFHRA, 537.01, appendix 8, 1944–45; Weyland, “Diary,” Nov 1944; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 1, 133–147.

78. Ltr, HQ 9AF to CG, XIX TAC, Nov 25, 1944, in USAFHRA, 537.01, appendix 8, 1944–45.

79. Weyland, “Diary,” Nov 14, 1944.

80. 362d FG, “Unit History,” Nov 1944. The 362d’s air echelon moved by surface

transportation from Prosnes near Reims to Rouvres near Verdun on November 5, 1944. The ground echelon followed later over a three-day period, November 19–21, while the flight echelon arrived on November 19.

81. 405th FG, “Unit History,” Nov 1944.

82. Weyland, “Diary,” Nov 15, 1944.

83. Weyland, “Diary,” Nov 17, 1944; Blumenson, ed., *Patton Papers*, pp 575, 586. See comments from U.S. ground force officers in AAF Eval Bd, “Third Phase Tactical Air Ops,” part 1, sec D.

84. XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 2: Nov 1944, pp 12–14, appendix.

85. XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, appendix 10: Statistical Summary; XIX TAC, “Combat Ops,” p 41; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 1, pp 28–33; Rpt, “Conference between General Patton, General Weyland and Third Army Correspondents,” Dec 9, 1944, USAFHRA, 168.7104–101, 1944; Cole, *Lorraine Campaign*, p 415.

86. XIX TAC, “Combat Ops,” pp 25–61; XIX TAC, “Tactical Air Ops in Europe,” pp 3–4. Like so many European theater firsts, this counter-flak measure was used first in the North African campaign, and then the Allies subsequently employed it in the Italian theater, well before its rediscovery and adoption in Northwest Europe.

87. XIX TAC, “Combat Ops,” p 61; US3A, “After Action Rpt,” vol 2, part 3: “G–2 Section Rpt,” p 23.

88. Gabel, “Lorraine Campaign,” pp 32–37; Cole, *Lorraine Campaign*, pp 417–519; Weigley, *Eisenhower’s Lieutenants*, pp 383–401.

89. US3A, “After Action Rpt,” vol 1, pp 144–145.

90. Patton, Diary Entry, Nov 21, 1944.

91. US3A, “After Action Rpt,” vol 1, pp 144–145.

92. Weyland, “Diary,” Nov 19, 1944; XIX TAC, “Combat Ops,” p 62. Although the Merzig bombing was second among the four joint operations in Lorraine, both XIX

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TAC and Third Army considered it less significant than the other three, the abortive Operation Tink.

93. XIX TAC, "Combat Ops," pp 62–63.

94. Weyland, "Diary," Nov 29, 1944; US3A, "After Action Rpt," vol 1, Nov 29, 1944.

95. Weyland, "Diary," Nov 30, 1944; 9AF, "Operational History of the Ninth Air Force, Bk I, Battle of the Ardennes: Dec 1, 1944–Jan 1945," sec 1: pp 11–21, USAF-HRA, 533.01–2; Patton, Diary Entry, Nov 30, 1944.

96. Weigley, *Eisenhower's Lieutenants*, pp 402–431; Griess, ed., vol 1, *Second World War*, pp 362–365.

97. Weyland, "Diary," Dec 1, 1944. See also Weigley, *Eisenhower's Lieutenants*, pp 397–401, 437–441.

98. Weyland, "Diary," Dec 2, 1944.

99. 9AF, "Op History of Ninth AF," pp 11–21.

100. XIX TAC, "Combat Ops," pp 62–63; XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Dec Ops, pp 2–4; XIX TAC, "Operational Summary," Dec 2, 1944; 9AF, "Op History of Ninth AF," pp 11–21.

101. The fighter-bombers seemed unable to suppress the enemy defenses using regular bombs.

102. US3A, "After Action Rpt," vol 2, part 3: "G–2 Section Rpt," pp 23, 26–27.

103. XIX TAC, "Morning Summaries," Sep 25–Dec 16, 1944; 9AF, "Ops Summary," Sep 25–Dec 16, 1944; XIX TAC, "Daily Intsum," Sep 25–Dec 16, 1944; XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Nov, 1944.

104. Weyland, "Diary," Dec 5, 1944.

105. Weyland, "Diary," Dec 6, 1944; XIX TAC, AC/S, A–3, "Operation Tink: Air Plan in Support of Third US Army," Dec 17, 1944, USAFHRA, 537.205A, 1944; XIX TAC, "Combat Ops," p 63.

106. Weyland, "Diary," Dec 7–8, 1944. The inner artillery zone represented a defined airspace under army control in which all aircraft, hostile or friendly, would be fired on by antiaircraft artillery. See chap. 5.

107. XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Dec 1945; US3A, "After Action Rpt," vol 1, Dec 1944.

108. XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Dec 1945.

109. The hectic activity is recorded in Weyland's diary for this period. See also Patton, Diary Entry, Dec 10, 1944.

110. Weyland, "Diary," Dec 1944; Patton, Diary Entry, Dec 10, 1944.

111. Weyland, "Diary," Dec 16, 1944. The only problem that surfaced was whether XV Corps would receive air support at the expense of XII Corps. General Eddy apparently had reversed an earlier agreement that provided XV Corps the air support in question. Weyland wisely side-stepped the matter, explaining that Third Army should notify XV Corps because it was not an air force matter. In any event, Operation Tink, his plan to break through the Siegfried Line, was to proceed as originally designed.

112. XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Dec 1944, pp 11–12.

113. XIX TAC, "Operation Tink," Dec 17, 1944.

114. Weyland, "Diary," Dec 18–19, 1944.

115. Weyland, "Diary," Dec 19–20, 1944.

116. Blumenson, ed., *Patton Papers*, pp 588–589. Lorraine has been valued for its ore deposits for centuries, and with these words Patton masked his own displeasure in the outcome of the Lorraine Campaign.

117. Although the weather and the size of his force limited the XIX TAC the most, the situation would have been far worse had the Allies not benefited from a shortening of the logistic tail that, before the port of Antwerp became available, led all the way back to Brittany.

118. Cole, *Lorraine Campaign*, p 598.

119. Rpt, "Conference Between Gen Patton, Gen Weyland and Third Army Correspondents," Dec 9, 1944.

120. *Ibid.*

Chapter 5

1. On the land campaign, see Hugh M. Cole, *The Ardennes: Battle of the Bulge* [U.S. Army in World War II: European Theater of Operations] (Washington, D.C.: Office of the Chief of Military History: 1965); John S.D. Eisenhower, *The Bitter Woods* (New York, Putnam: 1969); Charles B. MacDonald, *A Time for Trumpets: The Untold Story of the Battle of the Bulge* (New York, William Morrow: 1985); and Weigley, *Eisenhower's Lieutenants*, pp 445–566. This account of the ground campaign is based on the works cited above, on Griess, ed., vol 1, *Second World War*, chap. 16; and on 9AF, “Op History of Ninth AF.”
2. Eisenhower had the benefit of available Ultra information on the Germans’ logistics situation when he chaired the December 19 meeting. See Bennett, *Ultra in the West*, pp 210–211.
3. For the air contribution, see 9AF, “Op History of Ninth AF”; Col William R. Carter, “Air Power in the Battle of the Bulge: A Theater Campaign Perspective,” in *Airpower Journal* (Winter 1989), pp 10–33; Craven and Cate, eds., vol 3, *Europe: Argument to V–E Day*, pp 672–711.
4. Weigley, *Eisenhower's Lieutenants*, pp 445–566; Griess, ed., vol 1, *Second World War*, chap. 16; 9AF, “Op History of Ninth AF”; Cole, *The Ardennes*, pp 1–74; Eisenhower, *Bitter Woods*, pp 105–161.
5. Craven and Cate, eds., vol 3, *Europe: Argument to V–E Day*, p 673. On *Luftwaffe* and air doctrine, see 9AF “Op History of Ninth AF,” sec 4, pp 38–39; and Carter, “Air Power in Battle of the Bulge.”
6. Griess, ed., vol 1, *Second World War*, pp 375–377; Craven and Cate, eds., vol 3, *Europe: Argument to V–E Day*, pp 673–682; Weigley, *Eisenhower's Lieutenants*, pp 456–464. Hitler actually intended to begin the German assault in late November, but weather and supply mobilization delays forced postponement to mid-December. See Bennett, *Ultra in the West*, pp 188–227.
7. Craven and Cate, eds., vol 3, *Europe: Argument to V–E Day*, pp 673–682; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 1: Dec Ops 1944; US3A, “After Action Rpt,” vol 2, part 3: “G–2 Section Rpt”, pp 23, 26–27. German communications security helped prevent Ultra from providing sufficient information of enemy intentions if not his preparations, while Allied planners assumed the *Wehrmacht* would *not* follow the same Ardennes attack route it did when it invaded France in 1940.
8. Blumenson, ed. *Patton Papers*, p 582; Bennett, *Ultra in the West*, pp 188–204.
9. Cole, *The Ardennes*, p 63.
10. Weigley, *Eisenhower's Lieutenants*, pp 445–566; Griess, ed., vol 1, *Second World War*, chap. 16; Cole, *The Ardennes*, pp 33–74; Eisenhower, *Bitter Woods*, pp 217–257.
11. AAF Eval Bd, “Third Phase Tactical Air Ops,” pp 175–191.
12. 9AF, “Op History of Ninth AF,” sec 2, pp 5–6.
13. Carter, “Air Power in Battle of the Bulge,” p 28. The author discusses the reversal of second- and third-priority missions as prescribed in FM 100–20.
14. 9AF, “Op History of Ninth AF,” sec 2, pp 5–6.
15. See XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 2: Dec Ops 1944, pp 11–12, appendix.
16. 9AF, “Op History of Ninth AF,” sec 2, pp 32–34; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 2: Dec Ops 1944, pp 11–12, appendix.
17. XIX TAC, “Daily Intsum,” Dec 17, 1944. One of the aircraft was lost when it collided with a P–38.
18. Weyland, “Diary,” Dec 19, 1944; 9AF, “Ops Summary,” Dec 17–22, 1944.
19. Weigley, *Eisenhower's Lieutenants*, pp 445–566; Griess, ed., vol 1, *Second World War*, chap. 16; Cole, *The Ardennes*,

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pp 75–106; Eisenhower, *Bitter Woods*, pp 261–304.

20. Weyland, “Diary,” Dec 18, 1944; US3A, “After Action Rpt,” vol 1, Dec 18, 1944.

21. See especially, Weigley, *Eisenhower’s Lieutenants*, pp 496–501; and Griess, ed., vol 1, *Second World War*, pp 381–383.

22. Blumenson, ed., *Patton Papers*, pp 599–600.

23. Weyland, “Diary,” Dec 19, 1944.

24. 9AF, “Op History of Ninth AF,” sec 2, pp 8–16.

25. Weyland, “Diary,” Dec 20, 1944; US3A, “After Action Rpt,” vol 1, Dec 20, 1944.

26. Weyland, “Diary,” Dec 20, 1944.

27. *Ibid.*; Rpt, Faulkner, “Operational Employment of Radar.”

28. For accounts of Field Marshal Montgomery’s troubles with his American colleagues, see Weyland, “Diary,” Dec 20, 1944; Rpt, Joseph A. Wyant, 9AF Historian to Brig Gen. R.C. Candee, “Material in Response to Telephone Request of Sept 28, 1945 Concerning Allied Air Effort During the Battle of the Bulge,” n.d. [1945], part 1, Dec 1, 1944–Jan 26, 1945, USAFHRA, 533.4501–5; Weigley, *Eisenhower’s Lieutenants*, pp 445–566; Griess, ed., vol 1, *Second World War*, chap. 16; and Cole, *The Ardennes*, pp 48–74, 423–444.

29. Weyland, “Diary,” Dec 21, 1944.

30. *Ibid.*, Dec 22, 1944. Although it certainly was in Patton’s best interest to support Weyland’s proposal, the Third Army commander never refused Weyland’s requests to intervene with higher authorities. “Spitfire” and “Lucky” were the XIX TAC and Third Army call signs, respectively.

31. *Ibid.*; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 1, pp 88–91.

32. Weyland, “Diary,” Dec 23, 1944. The transfer of the Eighth Air Force fighter group proved the exception to the general rule of speedy transfers. The delay in preparing the Metz airfield seems to have been the main reason for this exception.

33. *Ibid.*, Dec 20–23, 1944; US3A, “After Action Rpt,” vol 2, part 3: “G–2 Section Rpt,” appendix, pp 26–27.

34. US3A, “After Action Rpt,” vol 1, Dec 22, 1944.

35. Weigley, *Eisenhower’s Lieutenants*, pp 445–566; Griess, ed., vol 1, *Second World War*, chap. 16; Cole, *The Ardennes*, pp 423–444; Eisenhower, *Bitter Woods*, pp 261–346.

36. 406th FG, “The 406th Occupier,” Sep 28, 1945, p 16, USAFHRA, GP–406–SU–NE, Sep 45.

37. US3A, “After Action Rpt,” vol 1, Dec 23, 1944. This Third Army report dryly recorded that “the Army Commander’s prayer for fair weather was followed in a few days by a break in the lowering skies that had prevented full air support by XIX Tactical Air Command.”

38. See XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 2: Dec Ops, pp 14–15. The framework for discussion of the Ardennes Campaign is based in large part on the Weyland diary and the following sources: US3A, “After Action Rpt,” vol 1, Dec, Jan Ops; XIX TAC, “Morning Summaries,” Dec 16, 1944–Jan 31, 1945; 9AF, “Ops Summary,” Dec 16, 1944–Jan 31, 1945; XIX TAC, “Daily Intsum,” Dec 16, 1944–Jan 31, 1945; Carter and Mueller, *Army Air Forces in World War II*; and XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, vol 2: Dec 1944, Jan 1945 Ops, and appendix 10: Statistical Summary.

39. See the preceding note for the statistical record, and Ivie, *Aerial Reconnaissance*, p 108.

40. US3A, “After Action Rpt,” vol 2, part 3: “G–2 Section Rpt,” p 27; Cole, *The Ardennes*, p 468. For good measure, the 354th also scrambled two planes on December 23 to intercept “bogies” in the XX Corps zone. None were found.

41. See US3A, “After Action Rpt,” vol 1, Dec, Jan Ops; XIX TAC, “Morning Summaries,” Dec 16, 1944–Jan 31, 1945; 9AF, “Ops Summary,” Dec 16, 1944–Jan 31, 1945; XIX TAC, “Daily Intsum,” Dec

16, 1944–Jan 31, 1945; Carter and Mueller, *Army Air Forces in World War II*; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, vol 2: Dec 1944, Jan 1945 Ops, and appendix 10: Statistical Summary.

42. Memo, A.C. McLean, XIX TAC/ORS to A–3, “Analysis of Attacks on Targets of Opportunity, Dec 15, 1944 to Jan 31, 1945,” Feb 16, 1945, USAFHRA, 537.01; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, appendix 7: 1944–45.

43. 9AF, “Op History of Ninth AF,” sec 3, pp 16–17; Carter and Mueller, *Army Air Forces in World War II*.

44. See XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 2: Dec Ops; US3A, “After Action Rpt,” vol 1, Dec, Jan Ops; XIX TAC, “Morning Summaries,” Dec 16, 1944–Jan 31, 1945; 9AF, “Ops Summary,” Dec 16, 1944–Jan 31, 1945; XIX TAC, “Daily Intsum,” Dec 16, 1944–Jan 31, 1945; Carter and Mueller, *Army Air Forces in World War II*; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, vol 2: Dec 1944, Jan 1945 Ops and appendix 10: Statistical Summary.

45. Air Ministry (Great Britain), *German Air Force*, pp 374–381; Bennett, *Ultra in the West*, p 216.

46. Air Ministry (Great Britain), *German Air Force*, pp 374–381; 9AF, “Op History of Ninth AF,” sec 3, pp 8–16, 57–61. The author of a recent article suggested that the *Luftwaffe* committed the classic mistake of failing to make air superiority the first priority for the assault, and instead divided its attention between support for its ground assault force and attacking the medium and heavy bombers that were striking key airfields and communications targets. Perhaps this resulted from the inappropriate nature of the air forces assembled for the operation, when Hitler and his advisors thought that interceptor pilots would have little trouble flying ground attack missions. German leaders realized they stood little chance of wresting control of the air from the Allies and, apart from doctrinal reasons, decided they had a better chance of supporting the ground

assault in the Ardennes directly rather than attempting to render Allied air forces ineffective. On the other hand, the Germans’ one chance may have been their planned massive air assault on Allied bases in the forward area that bad weather prevented them from carrying out on the eve of the battle. Indeed, the *Luftwaffe*’s later raid on Allied airfields on January 1, 1945, would suggest the success such a gamble might have produced at the start of the Ardennes assault. In any event, the *Luftwaffe* would remain a major focus of interest for Weyland and his fellow airmen. See Carter, “Air Power in Battle of the Bulge,” pp 27–29.

47. XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 2: Dec Ops, appendix 10: Statistical Summary; Air Ministry (Great Britain), *German Air Force*, pp 378–379. During the period December 23–27 the *Luftwaffe* fought well. After the Bastogne period, pilot inexperience and poor maintenance began to take their toll.

48. XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 2: Dec Ops, pp 2–3.

49. XIX TAC, “Op Statistics,” 1944–45, USAFHRA, 537.391, 1944–45; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 2: Dec Ops; US3A, “After Action Rpt,” vol 1, Dec, Jan Ops; XIX TAC, “Morning Summaries,” Dec 16, 1944–Jan 31, 1945; 9AF, “Ops Summary,” Dec 16, 1944–Jan 31, 1945; XIX TAC, “Daily Intsum,” Dec 16, 1944–Jan 31, 1945; Carter and Mueller, *Army Air Forces in World War II*; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, vol 2, Dec 1944, Jan 1945 Ops.

50. XIX TAC, “Daily Intsum,” Dec 23, 1944; Intvw, Burns, Jan 7, 1992.

51. XIX TAC, “Rpt on Combat Ops,” pp 38–39; Smith, “Marston Mat,” pp 84–88.

52. Weyland, “Diary,” Dec 24, 1944; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 1, 88–91.

53. Weyland, “Diary,” Dec 24, 1944; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 1, pp 88–91.

54. See XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 2: Dec Ops;

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US3A, “After Action Rpt,” vol 1, Dec, Jan Ops; XIX TAC, “Morning Summaries,” Dec 16, 1944–Jan 31, 1945; 9AF, “Ops Summary,” Dec 16, 1944–Jan 31, 1945; XIX TAC, “Daily Intsum,” Dec 16, 1944–Jan 31, 1945; Carter and Mueller, *Army Air Forces in World War II*; XIX TAC, “History,” Jul 1, 1944–Feb 18, 1945, vol 2: Dec 1944, Jan 1945 Ops, appendix 10: Statistical Summary.

55. 9AF, “Op History of Ninth AF,” sec 3, p 35; MacDonald, *Time for Trumpets*, p 522; U.S. Forces, European Theater, Battle Studies, vol 2: Air Operations, ca 1945, No. 21: “Air Resupply, Ardennes Counter-Offensive (Dec 16, 1944–Feb 21, 1945),” USMHI. Although the loss rate of 2 percent might appear high, especially when compared with Eighth Air Force statistics for the same period, much of the *Luftwaffe* force normally assigned to defend against the heavy bombers had been operating in the Ardennes region.

56. Weyland, “Diary,” Dec 26, 1944.

57. XIX TAC, “Tactical Air Ops in Europe,” p 31.

58. XIX TAC, “Rpt on Combat Ops,” pp 31–34; Ivie, *Aerial Reconnaissance*, p 115; Rpt, 10th Photo Group, to HQ 9AF, “Employment of Reconnaissance Aircraft, Tactics and Techniques,” Feb 10, 1945, USAFHRA, 537.628, 1945.

59. Rpt, Air Effects Committee, “Effect of Air Power,” p 151.

60. Weyland, “Diary,” Dec 26–27, 1944; US3A, “After Action Rpt,” vol 1, Dec 26–27, 1944.

61. Weigley, *Eisenhower’s Lieutenants*, pp 445–566; Griess, ed., vol 1, *Second World War*, chap. 16; 9AF, “Op History of Ninth AF”; Cole, *The Ardennes*, pp 606–648; MacDonald, *Time for Trumpets*, Book 6.

62. See XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 2: Dec Ops; US3A, “After Action Rpt,” vol 1, Dec, Jan Ops; XIX TAC, “Morning Summaries,” Dec 16, 1944–Jan 31, 1945; 9AF, “Ops Summary,” Dec 16, 1944–Jan 31, 1945; XIX TAC, “Daily Intsum,” Dec 16, 1944–Jan 31,

1945; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, vol 2, Dec 1944, Jan 1945 Ops, appendix 10: Statistical Summary.

63. 9AF, “Op History of Ninth AF,” sec 4, pp 6–9, 31–45; Craven and Cate, eds., vol 3, *Europe: Argument to V–E Day*, pp 701–711; Bennett, *Ultra in the West*, p 216.

64. See XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 2: Dec Ops; US3A, “After Action Rpt,” vol 1, Dec, Jan Ops; XIX TAC, “Morning Summaries,” Dec 16, 1944–Jan 31, 1945; 9AF, “Ops Summary,” Dec 16, 1944–Jan 31, 1945; XIX TAC, “Daily Intsum,” Dec 16, 1944–Jan 31, 1945; XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, vol 2, Dec 1944, Jan 1945 Ops, appendix 10: Statistical Summary.

65. US3A, “After Action Rpt,” vol 1, Dec 23–31, 1944.

66. Craven and Cate, eds., vol 3, *Europe: Argument to V–E Day*, p 699; XIX TAC, “Rpt on Combat Ops,” pp 25–26; AAF Evaluation Board, ETO, “Tactics and Techniques Developed by the United States Tactical Air Commands in the European Theater of Operations,” Mar 1, 1945, pp 21–23, USAFHRA, 138.4–33, 1945; Rpt, Faulkner, “Operational Employment of Radar.”

67. XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 1: pp 88–91. One must remember that not only did the night fighters do a good job with the resources available, their avionics technology was more complex than most military aircraft of the day and hence prone to reliability problems.

68. XIX TAC, “Tactical Air Ops in Europe,” pp 26–29; XIX TAC, “Rpt on Combat Ops,” pp 27–30.

69. XIX TAC, “Tactical Air Ops in Europe,” pp 26–29; XIX TAC, “Rpt on Combat Ops,” pp 27–30.

70. See the file entitled XIX TAC, “Reports of Attacks by Friendly-Type Aircraft,” Dec 1944–Jan 1945, USAFHRA, 537.599. Most incidents were attributed to pilots flying with other commands, such as Eighth Air Force, who were less familiar with terrain and flying conditions in Third Army’s area of operations.

71. Weyland, "Diary," Dec 30–31, 1944; Intvw, Gen Robert M. Lee, USAF (Ret) by author, Sep 22, 1989.
72. Weyland, "Diary," Dec 30–31, 1944; Intvw, Lee, Sep 22, 1989.
73. Patton, Diary Entry, Dec 31, 1944.
74. See the file entitled, XIX TAC, "Attacks by Friendly-Type Aircraft"; Davis, *Spaatz*, p 535.
75. Air Ministry (Great Britain), *German Air Force*, pp 379–381; Bennett, *Ultra in the West*, pp 218–219; Weyland, "Diary," Jan 1, 1945; US3A, "After Action Rpt," vol 1, Jan 1, 1945; XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Jan Ops; 9AF, "Op History of Ninth AF," sec 4, pp 20–21, 38–41; Patton, Diary Entry, Jan 1, 1945.
76. Air Ministry (Great Britain), *German Air Force*, pp 379–381; Bennett, *Ultra in the West*, pp 218–219; Weyland, "Diary," Jan 1, 1945; US3A, "After Action Rpt," vol 1, Jan 1, 1945; XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Jan Ops; 9AF, "Op History of Ninth AF," sec 4, pp 20–21, 38–41; Patton, Diary Entry, Jan 1, 1945.
77. Weyland, "Diary," Jan 1, 1945. On reaction by command personnel, see for example, 362d FG, "Unit History," Jan 1945.
78. Weyland, "Diary," Jan 1–2, 1945.
79. Rpt, Faulkner, "Operational Employment of Radar."
80. XIX TAC, "Tactical Air Ops in Europe," pp 26–29; XIX TAC, "Rpt on Combat Ops," pp 27–30. Coordination improved greatly when XIX TAC supplied Third Army controllers better FM radio (FM 1498) sets. The TCC also began continuous broadcasts via SCR–399 radio, and controllers became more proficient. See HQ AAF, *Condensed Analysis of Ninth AF*, pp 100–101.
81. Weyland, "Diary," Jan 1–2, 1945; see also XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Dec Ops; US3A, "After Action Rpt," vol 1, Dec, Jan Ops; XIX TAC, "Morning Summaries," Dec 16, 1944–Jan 31, 1945; 9AF, "Ops Summary," Dec 16, 1944–Jan 31, 1945; XIX TAC, "Daily Intsum," Dec 16, 1944–Jan 31, 1945; XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, vol 2: Dec 1944, Jan 1945 Ops, appendix 10: Statistical Summary.
82. XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 1, pp 88–91; 361st FG, "Unit History," Dec 1944–Jan 1945, USAF-HRA, GP–361–HI–FI, 1945; 367th FG, "Unit History," Dec 1944–Jan 1945, USAF-HRA, GP–367–HI, 1944–45.
83. FM 100–20, para 9.
84. US3A, "After Action Rpt," vol 1: Jan Ops; 9AF, "Op History of Ninth AF," sec 4, pp 30, 46–48; Bennett, *Ultra in the West*, p 219.
85. See XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Dec Ops; US3A, "After Action Rpt," vol 1, Dec, Jan Ops; XIX TAC, "Morning Summaries," Dec 16, 1944–Jan 31, 1945; 9AF, "Ops Summary," Dec 16, 1944–Jan 31, 1945; XIX TAC, "Daily Intsum," Dec 16, 1944–Jan 31, 1945; XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, vol 2, Dec 1944, Jan 1945 Ops, appendix 10: Statistical Summary.
86. Bennett, *Ultra in the West*, p 221.
87. 9AF, "Op History of Ninth AF," sec 10, p 7. Although the command attempted to use its more battle-weary aircraft for combat air patrols, these aircraft also could have seen better action if used against interdiction targets.
88. Weigley, *Eisenhower's Lieutenants*, pp 445–566; Griess, ed., vol 1, *Second World War*, chap. 16; 9AF, "Op History of Ninth AF"; Cole, *The Ardennes*, pp 606–648.
89. See especially, Griess, ed., vol 1, *Second World War*, pp 386–388; Weigley, *Eisenhower's Lieutenants*, pp 550–556.
90. 9AF, "Op History of Ninth AF," sec 5, p 7; Weyland, "Diary," Jan 2, 1945. This kind of flexibility in aerial assignment had become routine by this stage of the war.
91. XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, vol 2, Jan Ops.
92. US3A, "After Action Rpt," vol 2, part 3: "G–2 Section Rpt," pp 31–32.
93. XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Jan Ops, pp 6–7; Ivie, *Aerial Reconnaissance*, pp 121–122.

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94. Weyland, "Diary," Jan 9–10, 1945; XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Jan Ops, pp 6–7.
95. Weyland, "Diary," Jan 8–10, 1945.
96. *Ibid.*, Jan 10, 1945; Rpt, Faulkner, "Operational Employment of Radar." The GCA radar was unidirectional unlike the MEW, whose omnidirectional capability also enabled it to provide good navigational assistance. David R. Mets, "Manuscript Comments," May 15, 1992.
97. Weyland, "Diary," Jan 10, 1945; Rpt, Faulkner, "Operational Employment of Radar."
98. *Ibid.*
99. Weyland, "Diary," Jan 12, 1945. The command also encouraged its pilots to visit Third Army units and meet their personnel whenever flying commitments permitted.
100. 9AF, "Op History of Ninth AF," sec 4, pp 1–5, sec 5, pp 1–7.
101. Bennett, *Ultra in the West*, pp 219–220.
102. Weyland, "Diary," Jan 14, 1945.
103. XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Jan Ops, p 10; XIX TAC, "Rpt on Combat Ops," p 64.
104. XIX TAC, "Rpt on Combat Ops," pp 6–12; XIX TAC, "Tactical Air Ops in Europe," pp 5–13. The command was most critical about the absence of a good marker bomb in the inventory.
105. XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Jan Ops, p 11; US3A, "After Action Rpt," vol 2, part 3: "G–2 Section Rpt," p 31; XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 1: pp 22–28.
106. XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, vol 2: Jan Ops, p 2; XIX TAC, "Rpt on Combat Ops," p 47.
107. XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Jan Ops, p 12. The evening of January 17 General Patton appeared as guest of honor at a special XIX TAC senior officers' dinner in Luxembourg City to help the airmen celebrate their recent successes and consider the path ahead. Weyland, "Diary," Jan 17, 1945.
108. US3A, "After Action Rpt," vol 1, pp 15–22.
109. Weyland, "Diary," Jan 21, 1945; XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 1: pp 88–91.
110. 9 AF "Op History of Ninth AF," sec 5, pp 17–19.
111. Weyland, "Diary," Jan 22, 1945; XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Jan Ops, pp 14–16.
112. 368th FG, "Unit History," Jan 1945, USAFHRA, GP–368–HI, 1944–45.
113. XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Jan Ops, pp 14–16; Weyland, "Diary," Jan 22–23, 1945.
114. XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Jan Ops, p 16.
115. See XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Dec Ops; US3A, "After Action Rpt," vol 1, Dec, Jan Ops; XIX TAC, "Morning Summaries," Dec 16, 1944–Jan 31, 1945; 9AF, "Ops Summary," Dec 16, 1944–Jan 31, 1945; XIX TAC, "Daily Intsum," Dec 16, 1944–Jan 31, 1945; XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Dec 1944, Jan 1945 Ops, appendix 10: Statistical Summary.
116. Weyland, "Diary," Jan 22–23, 1945; Ivie, *Aerial Reconnaissance*, p 126.
117. AAF Eval Bd, "Third Phase Tactical Air Ops," p 373.
118. See XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Dec Ops; US3A, "After Action Rpt," vol 1: Dec, Jan Ops; XIX TAC, "Morning Summaries," Dec 16, 1944–Jan 31, 1945; 9AF, "Ops Summary," Dec 16, 1944–Jan 31, 1945; XIX TAC, "Daily Intsum," Dec 16, 1944–Jan 31, 1945; XIX TAC, "History," Jul 1, 1944–Feb 28, 1945, part 2: Dec 1944, Jan 1945 Ops and appendix 10: Statistical Summary.
119. Weyland, "Diary," Jan 24, 28, 1945.
120. Rpt, "Allied Air Effort During Battle of the Bulge."
121. Rpt, Air Effects Committee, "Effect of Air Power," p 63.
122. 9AF "Op History of Ninth AF," sec 5, p 18.

Chapter 6

1. XIX TAC, “Daily Intsum,” Feb 2, 1945; Air Ministry (Great Britain), *German Air Force*, pp 389–392.

2. US3A, “After Action Rpt,” vol 2, part 3: “G–2 Section Rpt,” p 34. German troop strength in the Eifel was uncertain, complicated by a *Wehrmacht* policy of constantly shifting troops out of the line. By the end of the Eifel Campaign in late March 1945, Third Army analysts estimated German forces had dwindled to about the size of one American division, approximately 16,000 troops. See Charles B. MacDonald, *The Last Offensive* [U.S. Army in World War II: European Theater of Operations] (Washington, D.C.: Office of the Chief of Military History, 1973), p 16.

3. For the land campaign, see MacDonald, *Last Offensive*; Bradley, *Soldier’s Story*, pp 490–554; Weigley, *Eisenhower’s Lieutenants*, pp 567–730; Williams, *Chronology*, pp 365–534; MacDonald, *Mighty Endeavor*, pp 455–569; and Griess, ed., vol 1, *Second World War*, pp 393–410.

4. On U.S. Army weaknesses, see Weigley, *Eisenhower’s Lieutenants*, pp 567–574. Allied military leaders chose Malta for their discussions because it had been selected as the site for a meeting between Churchill, Roosevelt, and their advisors, on their way to the Yalta conference.

5. MacDonald, *Last Offensive*, pp 55–69; Bradley, *Soldier’s Story*, pp 490–554; Weigley, *Eisenhower’s Lieutenants*, pp 567–730; MacDonald, *Mighty Endeavor*, pp 455–569; Griess, ed., vol 1, *Second World War*, pp 393–395.

6. 368th FG, “Unit History,” Feb 1945; XIX TAC, “History,” Feb 1945, pp 16–17. For the air war, see Craven and Cate, eds., vol 3, *Europe: Argument to V–E Day*, pp 756–808; HQ AAF, *Condensed Analysis of Ninth Air Force*, pp 43–48. The discussion and chronological format for this discussion of the campaign is based in large part on the Weyland Diary and the following

sources: XIX TAC, “History,” Feb, Mar, Apr, May, 1945; XIX TAC, “Morning Summaries,” Jan 28–May 8, 1945; XIX TAC, “Daily Intsum,” Jan 28–May 8, 1945; 9AF, “Ops Summary,” Jan 28–May 8, 1945; and Carter and Mueller, *Army Air Forces in World War II*.

7. XIX TAC, “History,” Jan–May 1945, appendix 8: Operational Research Data. Ninth Air Force established the Operational Research Section at XIX TAC on January 13, 1945, although General Weyland’s interest in the project dated from early October 1944. See XIX TAC, “History,” Jul 1, 1944–Feb 28, 1945, part 1, p 205.

8. XIX TAC, “History,” Jan–May 1945, appendix 8: Operational Research Data.

9. Carter, “Air Power in Battle of the Bulge,” pp 26–27.

10. XIX TAC, ORS, Rpt No. 91, “Operational Testing of SCR 584 Blind Bombing Procedure,” Apr 7, 1945; XIX TAC, ORS, Memo No. 79, “SCR 584 Blind Bombing in XIX TAC Command,” Apr 20, 1945, USAFHRA, XIX TAC, “History,” May 1945, sec 2: Annexes.

11. AAF Eval Bd, “Third Phase Tactical Air Ops,” p 33.

12. XIX TAC, “Operational Testing of SCR 584 Blind Bombing Procedure,” Apr 7, 1945; see also XIX TAC, “SCR 584 Blind Bombing,” Apr 20, 1945.

13. *Ibid.*; 9AF, ORS, Rpt No. 85, “Operational Accuracy of the Modified SCR 584 in Controlling Tactical Air Coordination Missions,” May 8, 1945, USAFHRA, XIX TAC, “History,” May 1945, sec 2: Annexes.

14. XIX TAC, “SCR 584 Blind Bombing,” Apr 20, 1945.

15. XIX TAC, “History,” Feb 1945, pp 4–5; XIX TAC “History,” Mar 1945, pp 105–108; XIX TAC, “Ordnance-Arma-ment Handbook for Tactical Air Liaison Officers,” Mar 1945, USAFHRA, XIX

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TAC, “History,” May 1945, sec 2: Annexes. More powerful than TNT, the British RDX could be considered the “original plastic” explosive.

16. Craven and Cate, eds., vol 3, *Europe: Argument to V-E Day*, pp 756–808; HQ AAF, *Condensed Analysis of Ninth AF*, pp 43–48; Weyland, “Diary,” Mar, 1945; XIX TAC, “History,” Mar 1945; XIX TAC, “Morning Summaries,” Jan 28–May 8, 1945; XIX TAC, “Daily Intsum,” Jan 28–May 8, 1945; 9AF, “Ops Summary,” Jan 28–May 8, 1945; Carter and Mueller, *Army Air Forces in World War II*.

17. Weyland “Diary,” Feb 4, 1945. On February 4, the day after General Weyland discussed reinforcing General Nugent’s command, he announced to his staff that the 354th would convert back to P–51s, while the 367th would replace its P–38 Lightnings with Thunderbolts.

18. 362d FG, “Unit History,” Feb 1945.

19. 354th FG, “Unit History,” Feb 1945.

20. *Ibid.*

21. For Patton’s operations in the Eifel, see especially MacDonald, *Last Offensive*, pp 55–69, 84–115.

22. *Ibid.*

23. The 371st Fighter Group transferred to XII TAC on September 29, 1944. In the spring of 1945 it boasted the fewest number of pilots and aircraft lost, and the lowest aircraft abort rate in the command.

24. Craven and Cate, eds., vol 3, *Europe: Argument to V-E Day*, pp 756–808; HQ AAF, *Condensed Analysis of Ninth AF*, pp 43–48; Weyland, “Diary,” Feb, Mar, Apr, May, 1945; XIX TAC, “History,” Feb, Mar, Apr, May, 1945; XIX TAC, “Morning Summaries,” Jan 28–May 8, 1945; XIX TAC, “Daily Intsum,” Jan 28–May 8, 1945; 9AF, “Ops Summary,” Jan 28–May 8, 1945; Carter and Mueller, *Army Air Forces in World War II*.

25. XIX TAC, “History,” appendix 10: Statistical Summary (see appendix 4).

26. Patton lost an infantry division and his III Corps headquarters to General Simpson’s Ninth Army.

27. Squadrons seem to have supported different corps on the same day, less from proximity to the target area than to needs of the particular ground element. Siegfried Line fighting often saw artillery assume primary responsibility for close support.

28. 9AF, “Ops Summary,” Feb 1–25, 1945. Tactical air power’s flexibility also applied to priorities, which in this case found close air support becoming most important.

29. *Ibid.* The special assault teams are described in MacDonald, *Last Offensive*, p 111. Weyland never mentioned earlier AAF tests that suggested fighter-bombers might have the best chance against pillbox-type targets. On the other hand, Third Army leaders seem to have preferred their assault team tactics rather than face the coordination problems required for fighter-bomber attacks against potential flak traps close to friendly troops in bad weather.

30. For discussion of four-plane flight operations, see XIX TAC, “Tactical Air Ops in Europe,” p 3, and 362d FG, “Unit History,” Mar 1945. Four-plane missions had been flown in North Africa, but the tactic received criticism from airmen, albeit under very different circumstances.

31. To be sure, in mid-March 1945, when the front moved far to the east and the *Luftwaffe* began to contest the Allied advance to the Rhine River more seriously, Weyland returned to the larger eight-plane close support formation.

32. Craven and Cate, eds., vol 3, *Europe: Argument to V-E Day*, pp 732–735; AAF Eval Bd, “Third Phase Tactical Air Ops,” pp 195–196; Rpt, Air Effects Committee, “Effect of Air Power,” pp 64–65. Allied losses included only seven of 1,411 heavy bombers, which bombed at exceptionally low altitudes. The XIX TAC lost two P–51s in this operation.

33. General Bradley’s report downplays Clarion’s impact because his evaluators considered it too isolated an operation.

34. Weyland, “Diary,” Feb 25, 1945.

35. *Ibid.*, Feb 28–Mar 7, 1945; XIX TAC, “Tactical Air Ops in Europe,” p 35.

General Weyland, who was promoted to major general on February 6, 1945, decided to spend a week in Cannes on the Riviera at the Hotel Martinez, popularly known as Flak House. In his absence, chief of staff Colonel Roger Browne assumed command. Opened in early 1945 for Ninth Air Force personnel, the Hotel Martinez had 50 beds reserved weekly for XIX TAC personnel. The command invariably filled its quota and viewed the rest-area policy as a major factor in reducing combat fatigue and preserving high morale. As for General Weyland, the vacation was his first of the campaign and gave him a chance to celebrate his recent promotion in pleasant surroundings.

36. MacDonald, *Last Offensive*, pp 196–197.

37. XIX TAC, “History,” appendix 10: Statistical Summary.

38. MacDonald, *Last Offensive*, pp 185–207; Weigley, *Eisenhower’s Lieutenants*, pp 619–622.

39. Weyland, “Diary,” Mar 9, 1945; Bennett, *Ultra in the West*, p 242.

40. XIX TAC, “Rpt on Combat Ops,” p 68. See also the “Statements from Allied Ground Forces” in AAF, “Third Phase Tac Air Ops,” pp 215–254, and the report compiled under General Bradley’s direction, Rpt, Air Effects Committee, “Effect of Air Power,” Annex 1.

41. Weyland, “Diary,” Mar 9, 1945; XIX TAC, “History,” Mar 1945.

42. See especially, Weigley, *Eisenhower’s Lieutenants*, pp 633–639.

43. On the Saar-Mosel-Rhine Trap, see *Ibid.*, pp 633–639; XIX TAC, “Rpt on Combat Ops,” pp 68–70; and MacDonald, *Last Offensive*, pp 185–207.

44. XIX TAC, “Rpt on Combat Ops,” pp 68–70.

45. Mission rates varied considerably with the combat conditions. With smaller, four-plane missions, the rate was relatively high. Sortie rates, by contrast, refer to the number of individual airplane flights during a given amount of time.

46. MacDonald, *Last Offensive*, chap. 11; Air Ministry (Great Britain), *German Air Force*, p 389.

47. XIX TAC, “Casualties, Mar 1944–May 1945,” USAFHRA, 537.391, 1944–45.

48. Many close air support targets appear to have been what might be termed battlefield air interdiction targets. Such aircraft were normally assigned to a corps for cooperation missions, then released for armed reconnaissance-interdiction flying. XIX TAC, “Casualties, Mar 1944–May 1945.”

49. 362d FG, “Unit History,” Mar 1945; Intvw, Burns, Jan 7, 1992.

50. XIX TAC, “History,” Mar, Apr, 1945, appendix 10: Statistical Summary.

51. Eisenhower, it must be said, was unwilling to cater any longer to Bernard Montgomery’s crushing ego. Indeed, his public carping a few weeks earlier during the Battle of the Bulge nearly cost the Field Marshal his job. When he learned he was about to be sacked, only an obsequious letter to Eisenhower, wherein he pledged to the Supreme Commander his future support as a subordinate in all matters, saved him his European command in World War II. For this episode, see Bradley, *Soldier’s Story*, pp 509–522; Weigley, *Eisenhower’s Lieutenants*, pp 641–644; and Bennett, *Ultra in the West*, p 242.

52. Weyland, “Diary,” Mar 20–22, 1945; XIX TAC, “Rpt on Combat Ops,” pp 69–70.

53. Without a better means of forestalling German movement at night, tactical air power could not prevent some degree of German escape. See XIX TAC, “History,” Mar 1945; Griess, ed., vol 1, *Second World War*, pp 399–400.

54. US3A, “After Action Rpt,” vol 2, part 3: “G–2 Section Rpt,” p 39.

55. XIX TAC, “Rpt on Combat Ops,” p 70; Air Ministry (Great Britain), *German Air Force*, p 390.

56. XIX TAC, “History,” Mar 1945, sec 2, Annexes.

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57. XIX TAC, "History," Mar 1945; Air Ministry (Great Britain), *German Air Force*, p 390.
58. US3A, "After Action Rpt," vol 2, part 3: "G-2 Section Rpt," p 39.
59. *Ibid.*, p 45.
60. Weyland, "Diary," Mar 27, 1945. For details on the Hammelburg incident, see Blumenson, ed., *Patton Papers*, pp 664–676; Weigley, *Eisenhower's Lieutenants*, pp 654–657; and MacDonald, *Last Offensive*, pp 280–284.
61. Griess, ed., vol 1, *Second World War*, pp 404–405.
62. Weyland, "Diary," Mar 23–31, 1945.
63. *Ibid.*, Mar 26, 1945.
64. 9AF, "Report on Tactical Air Cooperation, Organization, Methods and Procedures with Special Emphasis on Phase III Operations," Jul 31, 1945, USAFHRA, N138.4–34, 1945, pp 37–43. Although easier to transport, the British mesh track could prove troublesome on site and, once broken, would require considerable time and effort to repair. Smith, "Marston Mat," pp 84–88.
65. Weyland, "Diary," Mar 27–31, 1945; XIX TAC, "History," Mar 1945.
66. XIX TAC, "History," Apr 1945.
67. Blumenson, ed., *Patton Papers*, pp 680–681; Weigley, *Eisenhower's Lieutenants*, pp 681–687.
68. XIX TAC, "History," Apr 1945; 362d FG, "Unit History," Apr 1945.
69. *Ibid.*
70. Air Ministry (Great Britain), *German Air Force*, pp 391–392.
71. Weyland, "Diary," Apr 8, 1945; XIX TAC, "History," appendix 10: Statistical Summary; Ivie, *Aerial Reconnaissance*, pp 151–157.
72. XIX TAC, "History," Apr 1945.
73. Weyland, "Diary," Apr 1, 1945; XIX TAC, "History," Apr 1945; XIX TAC, "Tentative Moving Schedule," Apr 5, 1945, USAFHRA, 537.391, Aug 1944–Mar 1945.
74. Weyland, "Diary," Apr 3, 1945.
75. 368th FG, "Unit History," Apr 1945.
76. Weyland, "Diary," Apr 12, 1945.
77. *Ibid.*, Apr 4–10, 1945.
78. Weyland, "Diary," Apr 11–13, 1945; Blumenson, ed., *Patton Papers*, pp 683–685; and MacDonald, *Last Offensive*, pp 379–384.
79. Weyland, "Diary," Apr 10, 1945.
80. See Air Ministry (Great Britain), *German Air Force*, pp 391–392.
81. XIX TAC, "History," Apr 1945, pp 101–103.
82. Weyland, "Diary," Apr 16–17, 1945; Patton, Diary Entry, Apr 17, 1945.
83. XIX TAC, "History," Apr 1945.
84. XIX TAC, "Daily Intsum," Apr 19–20, 1945.
85. Weyland, "Diary," Apr 21, 1945.
86. US3A, "After Action Rpt," vol 2, part 3: "G-2 Section Rpt," pp 39, 45.
87. *Ibid.*
88. Weyland, "Diary," Apr 29, 1945.
89. XIX TAC, "History," appendix 10: Statistical Summary; Ivie, *Aerial Reconnaissance*, pp 151–157.
90. Weyland, "Diary," Apr 18–30, 1945; XIX TAC, "History," Apr 1945.
91. Weyland, "Diary," Apr 28, 1945.
92. *Ibid.*
93. Intvw, Weyland, Nov 19, 1974, p 157.
94. Weyland, "Diary," May 1–8, 1945.
95. US3A, "Gen Order No. 98," and XIX TAC, "Gen Order No. 34," both May 9, 1945, in XIX TAC, "History," May 1945, sec 2: Annexes, USAFHRA, 537.01.

Chapter 7

1. US3A, “GO 98,” and XIX TAC, “GO 34,” both May 9, 1945.

2. AAF Eval Bd, “Third Phase Tactical Air Ops,” Aug 1945, p 38.

3. XIX TAC, “History,” appendix 10: Statistical Summary; XIX TAC, “Op Statistics,” 1944–45. An aborted sortie refers to a combat sortie in which the airborne aircraft returns to its base or flies toward another friendly base before completing the scheduled mission for reasons other than enemy action (e.g., engine trouble).

4. Ltr, Brig Gen Robert M. Lee, Dep CG for Ops, 9AF, to Maj Gen O.P. Weyland, CG, XIX TAC, Mar 5, 1945, USAFHRA 537.01, 1945, appendix 8.

5. Rpt, Maj Gen Weyland to CG, 9AF, “Tank and Armored Vehicle Claims,” Mar 17, 1945.

6. *Ibid.*

7. *Ibid.* Authorities also allowed for reporting constraints based on a pilot’s abbreviated view while operating a 300-mph airplane.

8. Rpt, IX TAC, “Assessment of Fighter-Bomber Claims,” Apr 15, 1945, Quesada Collection, Box 5, MD, LC.

9. The questionnaire, responses, and correspondence among key commanders are found as an untitled Board report, AAF Evaluation Board, ETO, 1945, USAFHRA, 138.36A, 1945. This information was used to prepare the Board’s report on Phase III operations (USAFHRA, 138.4–36, 1945), which included extracts entitled “Statements from Allied Ground Forces on the Effectiveness of Air Cooperation.” The Board’s report resulted from the initiative of Lieutenant General Barney Giles, AAF Deputy Commander, in late January 1945, who wanted an assessment of close air support procedures, operations, and effectiveness from both ground and air viewpoints. Army Major General Jacob E. Fickel served as president of the board, whose members included three air officers

and one ground officer, supported by a staff of one ground and four air officers. Board members visited 18 major air and ground headquarters in the European theater, including those of Third Army and the XIX TAC. After its European survey, the board convened at Orlando Army Air Base, Florida, assigned to the AAF’s Tactical Center. The report was issued on August 20, 1945.

10. Ltr, Maj Gen Walton H. Walker, CG, XX Corps, US3A to Maj Gen O.P. Weyland, CG, XIX TAC, Apr 16, 1945, USAFHRA 537.01, 1945, sec 2: Annexes. Like most of his fellow airmen in tactical aviation during World War II, Weyland did not discuss his views on air power at great length. Quesada, who did speak out, left the Air Force. Later, when Weyland served as a four-star general and commander of the Tactical Air Command, he often expressed himself on the nature of tactical air power. His theme remained that of FM 100–20, centralized control of air assets at the theater level with air and ground elements directing their own forces.

11. Gen Quesada’s winter assault plan is discussed in Ltr, Dr. David Griggs to E.L. Bowles, Oct 17, 1944.

12. Weigley, *Eisenhower’s Lieutenants*, pp 727–730. Whatever difficulty one might have with the logic of Weigley’s argument, Patton always argued that mobility and superior numbers and tactics prevailed against the heavier-gun German weapons. See for example, “Transcript of Conference between Lt Gen G.S. Patton, Jr, and Third Army Correspondents,” Sep 7, 1944, in Patton Collection, Box 15, Chronological File, MD, LC.

13. Ltr, Gen O.N. Bradley, CG, 12th Army Group, to Gen Carl Spaatz, CG, USSTAF, May 17, 1945, USAFHRA, 138.4–36A, 1945.

14. XIX TAC, “Rpt on Combat Ops,” Introduction.

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15. AAF Eval Bd, “Third Phase Tactical Air Ops,” p 38; Rpt, Air Effects Committee, “Effect of Air Power,” pp 151.

16. AAF Eval Bd, “Third Phase Tactical Air Ops,” p 1. On the relations between U.S. Army Ground Forces and U.S. Army Air Forces headquarters and on postwar tactical air power developments, see Caroline F. Ziemke, “In the Shadow of the Giant: USAF Tactical Air Command in the Era of Strategic Bombing, 1945–1955” (PhD diss, Ohio State University, 1989), pp 1–75. In late 1945 General Devers, then commanding general of Army Ground Forces, could be expected to support the AAF view on air superiority as prerequisite for ground action.

17. AAF Eval Bd, “Third Phase Tactical Air Ops,” p 25.

18. See the statistics and charts in Rpt, Air Effects Committee, “Effect of Air Power,” plates 1, 2.

19. *Ibid.*, p 193.

20. Despite Ninth Air Force’s outstanding record flying against the Seine and Loire bridges prior to D-Day, planners initially focused on destroying enemy road and rail convoys in the fall of 1944, before deciding to concentrate air power against bridge targets.

21. On the subject of air interdiction, see Richard H. Kohn and Joseph P. Harahan, eds., *Air Interdiction in World War II, Korea, and Vietnam* (Washington, D.C.: Office of Air Force History, 1986).

22. FM 100–20, Introduction and para 16 b.(3); Jacobs, “Tactical Air Doctrine,” pp 35–49.

23. AAF Eval Bd, “Third Phase Tactical Air Ops,” p 342.

24. *Ibid.*, pp 341–343; XIX TAC, “Tactical Air Ops in Europe,” p 1.

25. AAF Eval Bd, “Third Phase Tactical Air Ops,” p 1.

26. Memo, Raines, May 20, 1991.

27. Rpt, Air Effects Committee, “Effect of Air Power,” p 43. The 105- and 155-mm howitzers, the most widely used American artillery pieces, fired projectiles weighing

approximately 30 and 100 pounds, respectively. See MacDonald, *Last Offensive*, p 12; and Roland G. Ruppenthal, *Logistical Support of the Armies*, vol 2 [U.S. Army in World War II: European Theater of Operations] (Washington, D.C.: Office of the Chief of Military History, 1989), pp 524–543; also, Department of the Army, *The Army Almanac* (Washington, D.C.: U.S. Government Printing Office, 1950), pp 123–126.

28. Rpt, AAF Evaluation Board, ETO, “Questionnaire for Army Officers, 1945,” USAFHRA, 138.36A, 1945, response to question #2.

29. The fact remains that P–47s with standard 500-lb bombs normally could do little damage to pillbox-type targets. As H. M. Cole described a three-squadron air attack during the Lorraine Campaign, “the planes hit their targets, but the 500-pound bombs carried by the P–47’s had little effect on reinforced concrete.” Cole, *Lorraine Campaign*, p 154.

30. Rpt, AAF Eval Bd, “Questionnaire for Army Officers,” response to question #14.

31. US3A, “After Action Rpt,” vol 2, part 3: “G–2 Section Rpt,” p 39, 45.

32. Ltr, Gen Bradley to Gen Spaatz, May 17, 1945.

33. Despite the laudatory emphasis on individual initiative in air-ground operations in western Europe, clearly future technology would enable commanders of Weyland’s generation to centralize control more effectively and by so doing constrain junior officer initiative. Advanced technology for command and control eventually would give to less-disciplined leaders far from the scene the ability to micro-manage events on the battlefield, and along with that, a corresponding decrease in the delegation of authority to leaders on the scene (though responsibility for the outcome remained securely tied to the field commanders). By the time of the Vietnam War in the 1960s, this trend had captured the President of the United States in the Oval Office! How might General Eisenhower, Supreme Com-

mander of Allied Expeditionary Forces, have responded at the eleventh hour to imprecations from President Franklin Roosevelt for a delay of D-Day?

34. Rpt, AAF Eval Bd, "Questionnaire for Army Officers," response to questions #23 and #36.

35. *Ibid.*, response to question #23.

36. AAF Eval Bd, "Third Phase Tactical Air Ops," pp 305–309. To be sure, the effectiveness of Allied fighters against the *Luftwaffe's* Bf 109 and FW 190 aircraft depended on more than technology alone. Piloting skills and experience, among other considerations, also proved crucial.

37. XIX TAC, "Rpt on Combat Ops," p 5.

38. Rpt, AAF Eval Bd, "Questionnaire for Army Officers," response to questions #20 and #21.

39. AAF Eval Bd, "Third Phase Tactical Air Ops," pp 384–385; XIX TAC, "Rpt on Combat Ops," pp 25–26.

40. AAF Eval Bd, "Third Phase Tactical Air Ops," p 33.

41. HQ AAF, *Condensed Analysis of Ninth Air Force*, p 105.

42. Ltr, Gen Bradley to Gen Spaatz, May 17, 1945.

43. Intvw, Gen James Ferguson, USAF, Jun 14, 1988, videotape on file at Air University television studio, Maxwell AFB, Alabama.

44. HQ AAF, *Condensed Analysis of Ninth AF*, p 121.

45. Blumenson, ed., *Patton Papers*, p 624.

46. Ltr, Patton to Weyland, Sep 21, 1945, Box 32, Personal and Professional Correspondence, Patton Collection, MD, LC.

47. Gen O.P. Weyland, "Interview," Nov 19, 1974, pp 151–152, USAFHRA, K239.0512–813; see also Kohn and Harahan, eds., *Air Superiority*, pp 68–69.

48. Weyland, "Interview," Nov 19, 1974, pp 151–152.

49. AGF, "Report of the Army Ground Forces Equipment Review Board," Jun 20, 1945, and subsequent correspondence and reports, including Weyland's notes, in Weyland Papers, USAFHRA, 168.7104–89, 1945. Cook had been XII Corps commander briefly under General Patton during the first half of August 1944, before blood and circulatory problems forced his reassignment and return to the United States. Had he served a longer tour with the air-ground team, perhaps his views on air support would have been more in accord with his former commander's.

50. *Ibid.*

51. *Ibid.*

52. See Kohn and Harahan, eds., *Air Superiority*, p 68; Futrell, *Ideas, Concepts, Doctrine*, pp 74–75, 165; Ziemke, "In the Shadow of the Giant," pp 1–30; War Department FM 31–75, "Air Ground Operations" (Aug 1946).

53. For postwar developments, see Futrell, *Ideas, Concepts, Doctrine*; Ziemke, "In the Shadow of the Giant."

54. The official report in two volumes is in the Weyland Papers, USAFHRA, 168.7104–53, 1954. On tactical air problems in Korea, see especially, Allan R. Millett, "Korea, 1950–1953," in Cooling, ed., *Close Air Support*, pp 345–405.

55. Kohn and Harahan, eds., *Air Superiority*, p 72.

